A STUDY TO EVALUATE THE EFFECTIVENESS OF DONOR BREAST MILK BANK FEED AMONG PRETERM NEWBORNS FROM SELECTED CENTERS AT MADURAI.

BY

LAKSHMI PRIYA.P

A dissertation submitted to the Tamil Nadu Dr. M. G. R. Medical University, Chennai.

In partial fulfilment of the requirements for the degree of

Master of Science in Child Health Nursing

UNDER THE GUIDANCE OF

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OCTOBER- 2018

CERTIFICATE

This is to certify that the dissertation entitled **"A STUDY TO EVALUATE THE EFFECTIVENESS OF DONOR BREAST MILK BANK FEED AMONG PRETERM NEWBORNS FROM SELECTED CENTRES' AT MADURAI"** is a bonafide work done by **Lakshmi Priya.P,** C.S.I. Jeyaraj Annapackiam College of Nursing, Madurai submitted in partial fulfilment for the degree of Master of Science in Nursing.

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SIGNATURE OF THE EXAMINERS:

1. External:_____ **2. Internal:_____**

Date: **Date:**

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"For many are called, but few are chosen".

"Not Somehow but Triumphantly"

"Many people hear the call of God which comes through His revelation of Himself through two things- the creation and the conscience within us. But only a 'few' will respond because they are the ones who are truly hearing". As a chosen one I gratefully thank **The LORD Almighty** for His grace and shower upon me throughout the study.

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ABSTRACT

"A study to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centres at Madurai" was undertaken by **P. Lakshmi Priya** in partial fulfilment of the requirement for the degree of Master of Science in Nursing at C.S.I Jeyaraj Annapackiam College of Nursing, affiliated to the Dr.M.G.R Medical University, Chennai, October -2018.

Objectives

1. To assess the pre-test and post-test score on donor breast milk bank feed among preterm newborns on control and experimental group.
2. To evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group.
3. To compare the pre-test and post-test score on donor breast milk bank feed among preterm newborns between control and experimental group.
4. To determine the association between the pre-test donor breast milk bank feed among preterm newborns with their selected demographical variables in control and experimental group.
5. To determine the association between the pre-test and post-test donor breast milk bank feed among preterm newborns with their selected clinical variables in control and experimental group.

Review was done relevant to the study. The conceptual frame work for the study was based upon open system model theory. The research design was quasi experimental, Non-randomized control group design, to evaluate the effectiveness of the donor breast milk bank feed among preterm newborns from selected centers and hospitals at Madurai. For Pilot Study 6 Samples were selected from Christian mission

hospital and children's speciality hospital Madurai. The samples were on routine formula feeding. The feasibility of the study found through the pilot study. A total of 60 samples were included in the study using purposive sampling technique. The experts validated the tool on observational check list assessed by the researcher. Reliability of the tool was r = 0.78 main study was done in children's hospital and donor Breast Milk bank centre. The collected data was analyzed tabulated and interpreted using descriptive and inferential statistics. Result showed that

- The effect of donor breast milk bank feed in the experimental group was significantly higher after the donor breast milk bank feed.
- In experimental group 3.3% had Mild effect, 23.3% had moderate effect, 50% had satisfactory effect, and 23.3% had optimal effect on donor breast milk bank feed among preterm newborns.
- Paired overall't' value in experimental group 14.57 and $p<0.001$ was highly significant.
- Unpaired overall't' value in pre-test between control and experimental group 0.638 and $p = 0.525$ was no significant.
- Unpaired overall't' value in post-test between control and experimental group 10.78 and $p<0.001$ was highly significant.
- There was no significant association between the pretest on donor breast milk bank feed of preterm newborns in control group with their selected demographical variables**.**
- There was a significant association between the pretest on donor breast milk bank feed of preterm newborns in experimental group with their selected demographical variables.(type of family and immunization)

- There was no significant association between the pre and post-test on donor breast milk bank feed of preterm newborns in control group with their selected clinical variables.
- There was a significant association between the pre and post-test on donor breast milk bank feed of preterm newborns in experimental group with their selected clinical variables (normal abdominal circumference).

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CHAPTER - I

INTRODUCTION

“Something as simple as better breast milk donation could save a million babies a year”

A preterm newborn is an individual who always need special care to survive and thrive. They are the major consumers of health care. In India, about 35% of total populations are preterm newborn. They are not only large in number but also vulnerable to various health problems and considered as special risk group.

Donor breast feeding is the best natural feeding. Breast milk is thought to be best form of nutrition for preterm newborn and infants. It is the healthiest form of milk for babies. WHO recommends exclusive breast feeding for the first six months, supplemented breast feeding is recommended until at least two years and then as long as the mother and child wishes.

Breast milk it is easily digestible by the preterm newborns intestine, offers a variety of immunologic properties, effective in protecting the baby from respiratory tract infection gastrointestinal infections and numerous allergies. It has got bacteriostatic functions against gram positive bacteria and also acts as a laxative agent in neonates. Donor breast milk contains growth modulators that modify growth and maturation.

The preferred food for preterm newborn is the mother’s own milk irrespective of baby’s gestational age but sometimes particularly in the case of sick and immature preterm newborn, the mother is unable to maintain her lactation and an alternative food is required. In 1800 BC the preterm newborn has been directly breastfeed by donor mothers. A donor mothers is a lactating woman who breast feeds another

preterm preterm newborn. While this may seem to be taboo in our culture preterm newborn was actually popular until the invention of formulas.

The practical alternative diets for baby who are unable to breast feed are donor breast milk bank or commercially available formula. The term donor breast milk bank refers to the collection, storage and processing of donor breast milk donated by lactating mothers for preterm newborns other than their own. The term sometimes applied to the collection and storage of milk for a mothers own preterm newborns when the preterm newborns is tem polarity unable to suck. Donor breast milk Bank is used for the treatment of many conditions (mainly in Neonatal Intensive Care Units: NICUs): prematurity, malabsorption, short-gut syndrome, intractable diarrhoea, Nephrotic syndrome, congenital anomalies, formula intolerance, failure to thrive, immune deficiencies.

The world's first donor breast milk was established in 1909, in Vienna, Austria. Asia's first breast milk bank was set up at Lokmanya Tilak Municipal Hospital in 1989.The first donor breast milk bank in Pune city was inaugurated in the Deenath Mangehkar Hospital. Since the 1930's The largest network of donors breast milk in the world 217 milk banks, and 126 milk collection points Donor breast milk bank are crucial for India because the practice of women donating milk on humanitarian grounds is common, since then some 25 donor breast milk banks across India – most of were located in the western states of Maharashtra and Gujarat have been performing vital services for premature babies requiring temporary intervention in cases of delayed lactation abandonment or illness, these banks also been a life savers for preterm newborn. In India there are 7 donors breast milk bank are there. They are Thiruchy Mahatma Gandhi memorial hospital, Kovai Government medical college hospital, Theni Government Medical College, Selam Mohan

Kumaaramangalam Government Hospital, Thanjai Raja Miraasuthaar Government Hospital, Elumpur Government Hospital. In Madurai, Madurai Rajaji Government Hospital.

NEED FOR THE STUDY

The first donor breast milk bank opened in Vienna, Austria in 1909 and the first in North America opened in 1919 in Boston, USA. There are around 517 donor breast milk banks all over the globe. However the first donor breast milk bank in Asia came into existence in Mumbai, India in 1989 at the Sion Hospital. Presently, there are around 14 such donor breast milk banks in India. However, the first public sector breast milk bank came into existence in 2013 in Kolkata. The first donor breast milk bank in Pune city was inaugurated in the Deenath Mangehkar Hospital. The donor breast milk are crucial for India because the practice of women donating milk on humanitarian grounds is common, since then some 25 human milk banks across India – most of were located in the western states of Maharashtra and Gujarat have been performing vital services for premature babies requiring temporary intervention in cases of delayed lactation abandonment or illness, these donor breast milk banks also been a life savers for preterm newborn. Then the donor breast milk bank opened in Tamil Nadu at Government hospitals such as Thiruchy, Madurai, Kovai, Theni, Selam, Thanjai, and Madurai. Around 75% preterm babies are born per year. In India 45% babies are benefit with the donor breast milk baking. In Tamil Nadu 20% babies are benefited.

According to a joint statement by the World Health Organization and United Nations Children's Fund in 1980. The best food for any baby whose own mother's

milk is not available means feed by the donor breast milk of another healthy lactating mother.

India has good examples of donor breast milk bank at Sion Hospital in Mumbai that was set up in 1989 and the Rajasthan state government's initiative to provide milk from Tonk's district hospital to preterm newborn deprived of mother's milk. But in donor breast milk bank across India, the Government needs to ensure the right safeguards are in place. In Tamil Nadu breast milk bank has been started in eight Government medical college and government district headquarters hospital, In Madurai has also been pioneer in establishing breast milk bank. The first's breast milk bank of Madurai was started in 1985 by a paediatrician, D. Murugadoss, on east Veli Street.

The recently released India Report of World Breast Feeding Trends Initiative 2008 highlights the role of breast feeding in ensuring child health and reducing preterm newborn and child mortality. India has a preterm newborn mortality rate of 55 per 1000 live births (SRS 2008) which accounts for 72 per cent of the country's under-five mortality rate. In 2010 the preterm newborn mortality rate was 49.13% and in 2011 it is 47.57% per 1000 live birth in that males is 46.18% and females is 49.14%.Breast feeding is the most important intervention to prevent preterm newborn infections, diarrhoea and pneumonia, which cause child deaths in the month after birth till the end of the first year of life. Initial breast feeding in the first hour after birth and exclusive breast feeding in the first six months after birth can go a long way in preventing most preterm newborn and infant deaths in India.

Donor breast milk has a broad range of therapeutic uses Common reasons for prescribing donor milk are prematurity, allergies, formula feeding intolerance

immunologic deficiencies post operative nutrition etc. Breast milk donation is not recommended for mothers who have certain health problems such as active herpes lesions on the breast, active untreated tuberculosis, human immunodeficiency virus infection, nephritis, serious illnesses, heart disease or cancer, severe malnutrition.

In the absence of the preterm newborn's own mother's milk, donor breast milk offers the benefits of donor breast milk for the infant including optimal nutrition, easy digestibility, and immunological protection against many organisms and diseases infection-fighting components such as immunoglobulin. Human milk also contains growth factors that can protect immature tissue, promote maturation, particularly in the gastrointestinal tract, and promote healing of tissue damaged by infection.

Donor breast milk is a natural, easily digestible and cost effective food necessary for the children entire immunity growth and development. Thus, with the above view, the investigator felt the need to assess the effectiveness of donor breast milk bank feed among preterm newborns. The donor breast milk bank feed improve the health of the preterm newborns and bring the awareness among postnatal mothers about donating breast milk and availability of donor breast milk bank.

STATEMENT OF THE PROBLEM

A study to evaluate the effectiveness of donor breast milk b54ank feed among preterm newborns from selected centers at Madurai.

OBJECTIVES

1. To assess the pre-test and post-test score on donor breast milk bank feed among preterm newborns on control and experimental group.
2. To evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group.
3. To compare the pre-test and post-test score on donor breast milk bank feed among preterm newborn between control and experimental group.
4. To determine the association between the pre-test donor breast milk bank feed among preterm newborns with their selected demographical variables in control and experimental group.
5. To determine the association between the pre-test and post-test donor breast milk bank feed among preterm newborns with their selected clinical variables in control and experimental group.

HYPOTHESIS

H_1: There is a significant difference between the pre-test and post-test score on donor breast milk bank feed in experimental group.

H_2: There is a significant difference between the pre-test and post-test score on donor breast milk bank feed in control and experimental group.

H_3: There is a significant association between the pre-test score on donor breast milk bank feed among preterm newborn with their selected demographical variables in control and experimental group.

H_4: There is a significant association between the pre-test and post-test score on donor breast milk bank feed among preterm newborn with their selected clinical variables in control and experimental group.

OPERATIONAL DEFINITIONS

Evaluate

It refers to systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards.

Effectiveness

It refers to the degree to which donor breast milk bank feed is successful in producing a desired result among preterm newborns comparing with the control and experimental group.

Donor breast milk bank feed:

It refers to collection, storage and processing of donated breast milk from donor’s mother in the breast milk bank centre, given as a paladai feed to preterm newborn.

Preterm newborn

It refers to the preterm baby born less than 28 to 37 weeks of gestation from birth to 28 days who are newly started with paladai donor breast milk bank feed 6 times from 8 am to 6 pm every 2 hours by the investigator in experimental group due to lack of mothers breast milk and preterm newborn who are fed through routine formula feed in the children hospital consider as a control group.

ASSUMPTIONS

- Donor breast milk bank feed may improve the health of the preterm newborns.
- Donor breast milk bank feed will have no adverse effect on preterm newborns.
- Donor breast milk bank feed will reduce the use of formula feed among preterm newborns.

DELIMITATION

- The study was delimited to preterm newborn from birth to 28 days from selected hospitals at Madurai.
- Data collection period was limited to 4 weeks.
- Preterm newborn were admitted in the hospital during the period of study.
- The study was delimited from 8 am to 6 pm.
- A quasi-experimental, non-randomized control design only adopted.

PROJECTED OUTCOMES

The result of the study would help the investigator to assess the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai to take possible remedial measures like demographical data and observational check list.

The study findings will help to improve the health of the preterm newborns to reduce morbidity and mortality rate. Finding on demographic variables would help to identify the factors which affect the health on donor breast milk bank feed among preterm newborns in selected centers and hospitals.

CHAPTER – II

REVIEW OF LITERATURE

Review of literature is conducted to generate a theoretical and scientific knowledge about particular phenomenon and results in a synthesis of what is known and not known about to the phenomenon. The primary purposes of reviewing literature is to gain a broad background that is available related to a problem in conducting research, the literature review facilitates selecting problem and purpose, developing a frame work and formulating a lesson plan. Literature review is a key step in research process. Review of relevant literature is an analysis and synthesis of research sources to generate a picture of what is known about a particular situation and knowledge gaps that exit in the situation. In order to attempt the goal in the present study, an attempt has been made to review and discus the literature.

The studies are categorized under the following headings:

PART I- Studies related to effectiveness of donor breast milk bank on preterm newborn.

Literature related to importance of donor breast milk bank:

a. **Donor breast milk bank feed pre-test and post-test study.**
b. **Donor breast milk bank feed compared with formula feed.**
c. **Benefits and processing of donor breast milk bank feed study.**

a. Donor breast milk bank feed pre-test and post-test study:

J Pediatr Rio J, 2017 at Brazil: Prevalence and factors associated with breast milk donation in banks that receive human milk in primary health care units Cross-sectional study carried out in 2017. A representative sample of 695 mothers of children younger than 1 year attended to at the nine primary health care units with human milk donation services were interviewed. A hierarchical approach was used to obtain adjusted prevalence ratios by Poisson regression. Results: The final model included the variables associated with breast milk donation ($p \leq 0.05$). 7.3% of the mothers had donated breast milk.

J Hum Lact 2016 at US: The nutritional content of donated expressed breast milk is variable. Using donated expressed breast milk to provide for the energy requirements of neonates is challenging. The authors hypothesized that a system of donated expressed breast milk energy content categorization and distribution would improve energy intake from donated expressed breast milk. Result: The energy content of the 85 analyzed milk samples ranged from 53 to 114 kcal/100 ml, with a median of 72 kcal/100 ml. The red energy content milk contained < 68 (median = 62) kcal/100 ml, the amber energy content milk contained between 68 and 78 (median = 72) kcal/100 ml, and the green energy content milk contained > 78 (median = 90) kcal/100 ml The donated expressed breast milk intake during the 378 feeding days analyzed ranged from 1.7 to 242.4 ml /kg/day, with the bottom daily volume intake ranging from 1.7 to 40.7 (median = 15.0) ml/kg/day, the middle daily volume intake from 40.7 to 98.1 (median = 71.2) ml/kg/day, and the top daily volume intake from 98.5 to 242.4 (median = 126.4) ml/kg/day.

Ahmet Karadag, Ramazan Ozdenir 2015 at Turkiy: the present study aims to determine the knowledge, attitudes and views of mothers regarding infant feeding, breast milk, wet nursing and human milk banks. This descriptive cross sectional study was composed of 1042 mothers who delivered at different hospitals Turkey. Almost half of the participating mothers, 49.9%, agreed with the establishment of alternative human milk banks in Turkey. Result: Only 7.7% of the mothers in this study expressed views in favor of establish of western style human milk banks. Approximately half of the mothers (42.4%) indicated that they were against the establishment of any kind of human milk banks in Turkey. Only 9.2% of the mothers in this study stated that they would volunteer to donate their breast milk to the Western style human milk banks, and only 6.95 of the mothers approved obtaining milk from that type of human milk banks. Finally 44.2% of the mothers stated that they would donate their breast milk to the alternative human milk banks. And 31.9% of the mothers approved obtaining milk from this type of human milk banks.

Anchalee E. L Palmquist and Kirsten Doehler 2015 at US: A study to describe human milk sharing practices in the U.S. Specifically; examine milk sharing social networks, donor compensation, the prevalence of anonymous milk sharing interactions, recipients' concerns about specific milk sharing risks, and lay screening behaviors. Data on human milk sharing practices were collected via an online survey. Chi-square analyses were used to test the association between risk perception and screening practices. A total of 867 (661 donors, 206 recipients) respondents were included in the analyses. Most (96.1%) reported sharing milk face-to-face. Only 10% of respondents reported giving or receiving milk through a non-profit human milk bank, respectively. There were no reports of anonymous purchases of human milk.

Result: A small proportion of recipients (4.0%) reported that their infant had a serious medical condition. Screening of prospective donors was common (90.7%) but social relationship and familiarity. Likewise, concern about specific milk sharing risks was varied, and risk perception was significantly associated (P-values = 0.01 or less) with donor screening for all risk variables except diet. Understanding lay perceptions of milk sharing risk and risk reduction strategies that parents are using is an essential first step in developing public health interventions and clinical practices that promote infant safety.

Rojjanasrirat and Wilaiporn 2014 at Bihar: A study is to determine the knowledge and the views of the mothers towards milk banking. This study is a cross-sectional survey. The study was carried out with 404 mothers who gave birth in a two maternity hospitals and one university hospital in Izmir using the face-to-face interview technique between March 2014 and June 2014. The study data were collected using a 30-item socio-demographic questionnaire. Result: The mothers' mean age was 28.4 years (16–46 years). Of the mothers, 45.5% were primary school graduates, 80.2% were members of a nuclear family, 75.7% had less than three children, 63.4% gave birth by caesarean section and only 79.5 percent were able to breastfeed before being discharged. Of the mothers, 41.6% were aware of milk banking, 71.3% were willing to receive milk bank services and 68.8% were willing to donate breast milk.

Tarah T Colaizy, Susan Carlson 2012 at Bangalore: To determine the effect of human milk, maternal and donor, on in-hospital growth of very low birth weight infants. We performed a retrospective cohort study comparing in-hospital growth in VLBW infants by proportion of human milk diet, including subgroup analysis by maternal or donor milk type. Primary outcome was change in weight z-

score from birth to hospital discharge. Result: Infants fed >75% human milk had a greater negative change in weight z-score from birth to discharge compared to infants receiving < 75% (−0.6 vs., -0.4, p = 0.03). Protein and caloric supplementation beyond standard human milk fortifier was related to human milk intake (p = 0.04). Among infants receiving > 75% human milk, there was no significant difference in change in weight z-score by milk type (donor −0.84, maternal −0.56, mixed −0.45, p = 0.54). Infants receiving >75% donor milk had higher rates of SGA status at discharge than those fed maternal or mixed milk (56% vs. 35% (maternal), 21% (mixed), p = 0.08).

Cochrane Library January, 2010 at Australia: A study was conducted to assess the impact of opening a milk bank in the neonatal unit on the proportion of infants receiving exclusive breast milk at discharge.50 infants born before the opening of milk bank and 54 infants born after the opening of a milk bank were selected as samples. The data was collected about the hospital stay, hours of stay, hours of life when feeding was started, hours of life when full enteral feeding was attained, type of milk received during admission and type of feeding on dicharge.The results shows that proportion of infants receiving exclusive breast milk in first group was 54% and second group was 56%. The study concluded that opening of donor milk banking in a neonatal unit did reduce the proportion of infants exclusively feed with breast milk at discharge but did reduce the proportion of infants that received infant formula during the first four weeks of life.

Dash Manjubala, 2010 at Gujarat: Mentioned that Human milk is superior to all substitutes and that banked human milk may be suitable feeding alternative for infants whose mothers are either unable or unwilling to provide their own milk. Banked milk also can contribute to the health of the infants who receive the donated milk. According to World Health Organization and United Nations International Children's Emergency Fund, exclusive breast feeding for six months is the most effective child survival intervention which reduces the fewer than five children deaths about 16% in India. Result: So mothers who lose their preterm newborns should be encouraged to consider donating milk as they can help another sick baby with their discarded milk.

Dr.Mondkar, 2006 at Delhi: A study was conducted to assess the growth and clinical evolution of very low birth weight infants fed during hospital stay with milk from a human milk bank according to the caloric-protein value. Very low birth weight infants were included: 10 were fed milk from their own mothers (Group I), and 30 were fed human milk bank. Growth curves were adjusted using nonlinear regression to the measured growth parameters. In terms of growth the 50th percentile for GI was a weight gain of 0.1 g/day (Group I) vs. 0.8 g/day (Group II), a length gain of 0.75 cm/week (Group I) vs. 1.02 cm/week (Group II), and a head circumference gain of 0.74 cm/week (Group I) vs. 0.76 cm/week (Group II). Human milk bank allowed a satisfactory growth and good clinical evolution for very low birth weight infants. A observational longitudinal was conducted to assess the feasibility of providing donor breast milk to infants after pasteurization.191 low birth weight infants were selected for the study, out of them 96 infants received their own mother's milk.. Other 95 infants who were potentially eligible to receive donor milk, only 40 did in fact receive donor milk. Result: Above study reported that it is feasible to supply donor milk to

and there was no evidence of bacterial contamination in the samples analyzed, and no adverse events from feeding with donor breast milk.

Musaruf, 2006 at Mumbai: Mentioned that the human milk centre at India in Mumbai city has been providing mother's milk to preterm newborn babies. The human milk bank at Sion hospital caters to preterm newborn and premature babies whose mothers do not lactate. The deprivation of breast milk, which contains a right balance of nutrients and is the most easily digestible food for babies, could lead to lower IQ levels and weaker immune systems, apart from other deficiencies. However, the Sion hospital milk bank, authorities claims could be the first in Asia, fulfills this requirement. There are at least 8,000 babies born here every year. Result: In that 20 to 35% of these cases direct breast feeding becomes impossible and thus human milk bank is a support system available. Thousands of babies, many of them teenagers now, will be thanking the Sion hospital milk bank for those first drops of life and health.

Chattopadhyay B 1998 at Kolkata: A study on human milk banking in a district general hospital in Kolkata. A human milk bank was organized in the special care baby unit of a district general hospital. The staff of the unit and members of a voluntary organization helped to contact donors and arrange collection of milk samples. Over two years 2093 samples of expressed breast milk were collected from 187 donors and examined bacteriological. Sixty-five babies received milk from the bank during the second year. Although these infants were vulnerable, mortality and morbidity were not adversely affected by the banked milk they received. Results: This study concludes that cost of establishing and running a human milk bank need not be high. Extensive resources such as extra staff and laboratory and transport facilities

were not needed. Enthusiastic co-operation and good will between hospital staff, voluntary helpers, and donors contributed greatly to the success of the scheme.

b. Donor breast milk bank feed compared with formula feed:

Wojcik K Y, et al 2009 at Uttaranchal: A study on Banked donor milk. It may be a reasonable substitute for mother's milk for human infants. This study determined the composition of donated milk from a large number of banked donor milk samples and compared it to the reported values of macronutrients in breast milk. 415 sequential samples from 273 unique donors were analyzed for fat, protein, and lactose content, as well as energy density. A ninety-five percent confidence interval was computed using standard, large sample methods. Banked donor milk macronutrient content was found to differ from the values reported in the literature for mature human milk. Unformulated banked donor milk alone, similar to mother's milk alone, does not have sufficient macronutrient content or energy density to sustain a very-low-birth-weight preterm infant. Result: The study revealed that banked donor milk is good option for preterm infants than formulas when mother's milk is unavailable.

Pimenteira Thomas a C et al, **2008 at Brazil**: A study to identify factors that influenced or motivated women (N = 737) to donate human milk to human milk banks in Alagoas. The most common characteristics of a regular donor were having 4 to 7 pregnancies. Result: The most commonly reported reasons for donating were encouragement of a health professional (61.3%), followed by the needs of the babies the banks serve (25.3%). Most of the donors (49.9%) were introduced during their stay in the hospital to the human milk bank to which they donated, and 25.8% chose the bank recommended by a health professional. This study concludes that health

professionals play an indispensable role in motivating mothers to become human milk donors.

Woo Katie and Spatz, Diane 2004 at Spain: Endorses that human milk is species specific and the optimal nutrition for infants, and that banked human milk is a suitable alternative. After the death of an infant, breast milk often is disposed of without consideration of donation because the public and healthcare providers are unaware of human milk banks. It is imperative that healthcare providers become educated regarding human milk banking because of the increase in informal sharing of breast milk via the Internet. Breast milk that has not been screened and treated has the risk of transmitting infections such as hepatitis and HIV. Healthcare providers should be familiar with the selection criteria for suitable donors and how to approach families when the death of an infant is imminent. Result: Human milk banks are able to provide human milk to adopted, preterm, or ill infants whose mothers are unable to provide their own milk.

RM Nicholl, HR Gamsu et al 1999 Delhi: A study regarding the effect of adding a commercially prepared milk fortifier to human (maternal or bank) milk and measured changes in lower leg length velocity using anemometry, weight gain and biochemical indices of nutrition. Babies were allocated to one of three feed groups, in a semi-randomized fashion, to receive human milk alone (group I), fortified human milk (group II) or a preterm formula (group III). All babies who received fortified milk either showed significant ($p = 0.0004$) acceleration in lower leg length velocity during the period studied, or maintained their pre-study period velocity. Result: This increase in lower leg length velocity was comparable to that achieved by a group of babies given a standard preterm infant formula ($p < 0.001$). By comparison, the control group's change in lower leg length velocity was more modest ($p = 0.04$).

Babies who received human milk with the fortifier added had the lowest serum levels of alkaline phosphates at the end of the study period determination of human milk protein profile usable for nursery milk bank and fortification and showed the importance of milk bank.

c. Benefits and processing of donor breast milk bank feed study:

Christina J. Valentine, Georgia Marrow 2017 at California: To assess the most basic elements of nutrition, we tested the hypotheses that fatty acid and amino acid composition of Pasteurized Donor Milk is highly variable and standard pooling practices attenuate variability; however, total nutrients may be limiting without supplementation due to late lactation stage of the milk. Result: The composition of human milk is highly dependent upon lactation stage, which was highly significant in the multivariate regression analyses. Consequently, we analyzed both amino acids and fatty acids for correlation with lactation stage in individual and in pooled samples. In the individual samples, all amino acids were negatively correlated with lactation stage ($p \leq 0.006$), but these correlations were no longer significant after the samples were pooled ($p \geq 0.131$). Only the fatty acids eicosapentaenoic acid (EPA, 20:5ω3) ($p = 0.029$) and docosa hexaenoic acid (DHA, 22:6ω3) ($p = 0.025$) were significantly correlated with lactation stage in the individual samples, and these correlations were no longer significant after the samples were pooled ($p = 0.819$ and $p = 0.690$, respectively).

Yadav S, Rawal G, 2015 at US: The breast milk is the most important source of nutrition for the infants. The human breast milk banks can work efficiently and are cost effective. Besides, not much of human workforce has to be involved into such banks. Result: On the importance of human breast milk banks in the management of

premature infants. This paper highlights the importance of the human breast milk banks and also gives insights about various factors associated with it.

Dominica Tanis R Fenton 2014 at Sikkim: Breast milk nutrient content varies with prematurity and postnatal age. Our aims were to conduct a meta-analysis of preterm and term breast milk nutrient content (energy, protein, lactose, oligosaccharides, fat, calcium, and phosphorus); and to assess the influence of gestational and postnatal age. Additionally we assessed for differences by laboratory methods for: energy (measured vs. calculated estimates) and protein (true protein measurement vs. the total nitrogen estimates). Systematic review results were summarized graphically to illustrate the changes in composition over time for term and preterm milk. Since breast milk fat content varies within feeds and diurnally, to obtain accurate estimates we limited the meta-analyses for fat and energy to 24-hour breast milk collections. Result: In the comparison between measured and calculated energy contents of milk, measured estimates were −6 to 10 kcal/dL (−9 to 13%) greater than the calculated analyses, but only four differences (preterm milk at weeks 3–4 and 7–9, term milk at weeks 7–9 and 10–12 weeks) met the adjusted statistical significance criteria (i.e. $p < 0.001$).

Vicenta E. Borja 2010 at Zimbabwe: A cross sectional study on the effect of storage duration at varying temperature ranges, the pattern of microbial isolates and the quantity of Colony-Forming Units (CFU) on expressed breast milk at bacteriology laboratory, university of Zimbabwe in Parirenyatwa Hospital. Result: There was no growth of organisms in stored breast milk after four hours, eight hours, and 24 hours and 72 hours storage duration at temperature ranges 0 to 4 degrees℃, 4-10 degree ℃, 15 to 27 degrees ℃ and 30 to 38 degrees ℃ respectively. Growth was detected after the storage durations. The study revealed that storage duration for expressed breast

milk should not exceed 24 hours in refrigerator temperature at 0 to 4 degrees ℃, eight hours at room temperature at15 to 27 degrees C and four hours at high temperature at 30 to38 degrees ℃. Although freezing temperature at 0 to 4 degrees ℃ seemed safest for breast milk storage.

Omarsdottir S, et al, **Sweden 2008 at Sweden**: A cross sectional study in Breast Milk handling routines for preterm infants in Sweden. This study was designed to document current routines pertaining to breast milk use for preterm infants in Sweden. Questionnaires were sent to all 36 Neonatal intensive care unit in Sweden. Of the 36 neonatal units 27 had their own milk banks. Result: Bacterial culture was done on donor milk in 24 milk banks. In 22 milk banks donor milk was pasteurized. In 11 of 36 units maternal milk was frozen to reduce the risk of cytomegalovirus infection. The study concluded that routines for breast milk banking handling differ among the 36 neonatal units in Sweden and new guidelines can standardize the handling of human milk, thereby improving nutrition and minimizing the risk of breast milk- induced infection in the preterm infant.

Vervoort, L Delsat et al 2007 at Pune: A study and demonstrated that human milk is the recommended source of nutrition in preterm infants providing several benefits with regards to feeding tolerance, immunity and cognitive development. Therefore, mother's milk must be expressed, stored and transported to the neonatal unit and could be contaminated. Result: More than 50% of analyzed milks had to be pasteurized (46%; >104 coagulate negative Staphylococcus per ml) or to be discarded (7% pathogen contamination). The incidence of pasteurization tends to increase during the summer, suggesting a seasonal influence. Among the 60 mothers who's at least one sample had pathogen contamination, 27% had a contamination occurring only during a few days, but 73% had more than 50% of their samples discarded. This

study suggests the need to promote the use of human milk bank and its established functional unit to prevent contamination in human milk and serve it in necessity.

Woo K, Spatz D 2007 at US: A study on Human milk donation: The American Academy of Pediatrics (AAP) strongly endorses that human milk is species specific and the optimal nutrition for infants, and that banked human milk is a suitable alternative. After the death of an infant, breast milk often is disposed of without consideration of donation because the public and healthcare providers are unaware of human milk banks. Donors are screened, and milk is pasteurized while preserving many of the beneficial components of breast milk. It is imperative that healthcare providers become educated regarding human milk banking because of the increase in informal sharing of breast milk via the Internet. Breast milk that has not been screened and adopted, preterm, or ill infants whose mothers are unable treated has the risk of transmitting infections such as hepatitis and HIV. Healthcare providers should be familiar with the selection criteria for suitable donors and how to approach families when the death of an infant is imminent. Result: The study revealed that there is a benefit of Human milk banks, are able to provide human milk to provide their own milk.

Arnold L A 2006 at UP: A study on ethics of donor human milk banking. Two different models of ethics and their direct impact on donor milk banking are examined- biomedical and public health ethics. Interactions of parties with each other and how the quality and type of interaction affects the ethical delivery of donor milk banking services are described. Crystallization is at the heart of the qualitative methodology used. Writing as a method of inquiry, an integrative research review, and personal experience are the three methods involved in the crystallization process.

Result: This study helps for improving access and knowledge of banked donor human milk a valuable public health resources.

Friis H, Andersen HK. 1992 at Meghalaya: A study on inactivation of cytomegalovirus in raw banked milk during storage at -20 degrees C and pasteurization. Samples of milk from 23 mothers attending the department of obstetrics and gynecology and 36 who donated milk to the department's milk bank were cultured for cytomegalovirus. Virus was isolated from samples from 12 of the milk donors but none of the mothers attending the department; follow-up studies during lactation in seven of these 12 women showed that five continued to excrete the virus. Samples were taken on three occasions from one woman who regularly excreted high titers of the virus. Storage at -20 degrees C for over three days reduced the titer by over 99%; after pasteurization at 63 degrees C for eight minutes the milk did not contain any viable virus. Result: It is recommended that raw banked milk used for feeding preterm babies should be kept frozen for at least 72hours before feeding. The study reveals that chances spreading are very less in banked milk.

CONCEPTUAL FRAMEWORK

The conceptual framework plays interrelated roles in the progress of science. Their overall purpose is to make is an interrelated concept on abstractions are assembled together in some scheme by virtue of their relevance to a common scheme. It is a device that helps to stimulate research and the extension of knowledge by providing both direction and impetus. The present study was aimed at determining the effectiveness of donor breast milk bank feed among preterm newborns.

The conceptual framework of this study was derived from J.W Kenny in the year 1999 open system model. The open system model was formulated in the year of 1999. The open system enumerates the various aspects of system and interactions. An open system should be contrasted with the concept of an isolated system which exchanges neither energy and matter nor information with its environment. Open system theory is useful in breaking the whole process into sequential tasks to ensure goal realization.

Input is the first component of a system in which information, energy of mater that enters a system. For a system to work well, input should contribute in achieving the purpose of the system. In this study input refers to assess the each preterm newborn's demographic and clinical variables in selected donor breast milk centers Rio, and Christian mission hospitals at Madurai.

In control group pre-test was conducted to evaluate the preterm newborn on routine formula feed by using observational check list. In experimental group pre-test was conducted to evaluate the effectiveness of donor breast milk bank feed by using observational check list.

Throughput was the second component in which it allows the input to be changes, so that it is useful to the system. In this study throughput refers to there was no intervention in control group and there was a intervention process of paladai feeding of donor breast milk bank feed among pre term preterm newborns in experimental group.

Output was the third component of the system which measures the success of failure of the output and consequently the effectiveness of the system. In this study the expected outcome was obtained by evaluating the effectiveness of the donor breast milk bank feed on preterm newborns through demographical variables clinical variables and observational check list in control and experimental group.

Feedback: according to J.W. Kenny's feedback were the environment response to the system output. In the present study environment response to the system output was not done. So as an ethical consideration the researcher educated and gave pamphlet regarding donor breast milk bank feed among mothers of preterm newborn.

Finally the system to determine whether or not the end result of the system has been achieved. It emphasizes the effect of the input, throughput, and output.

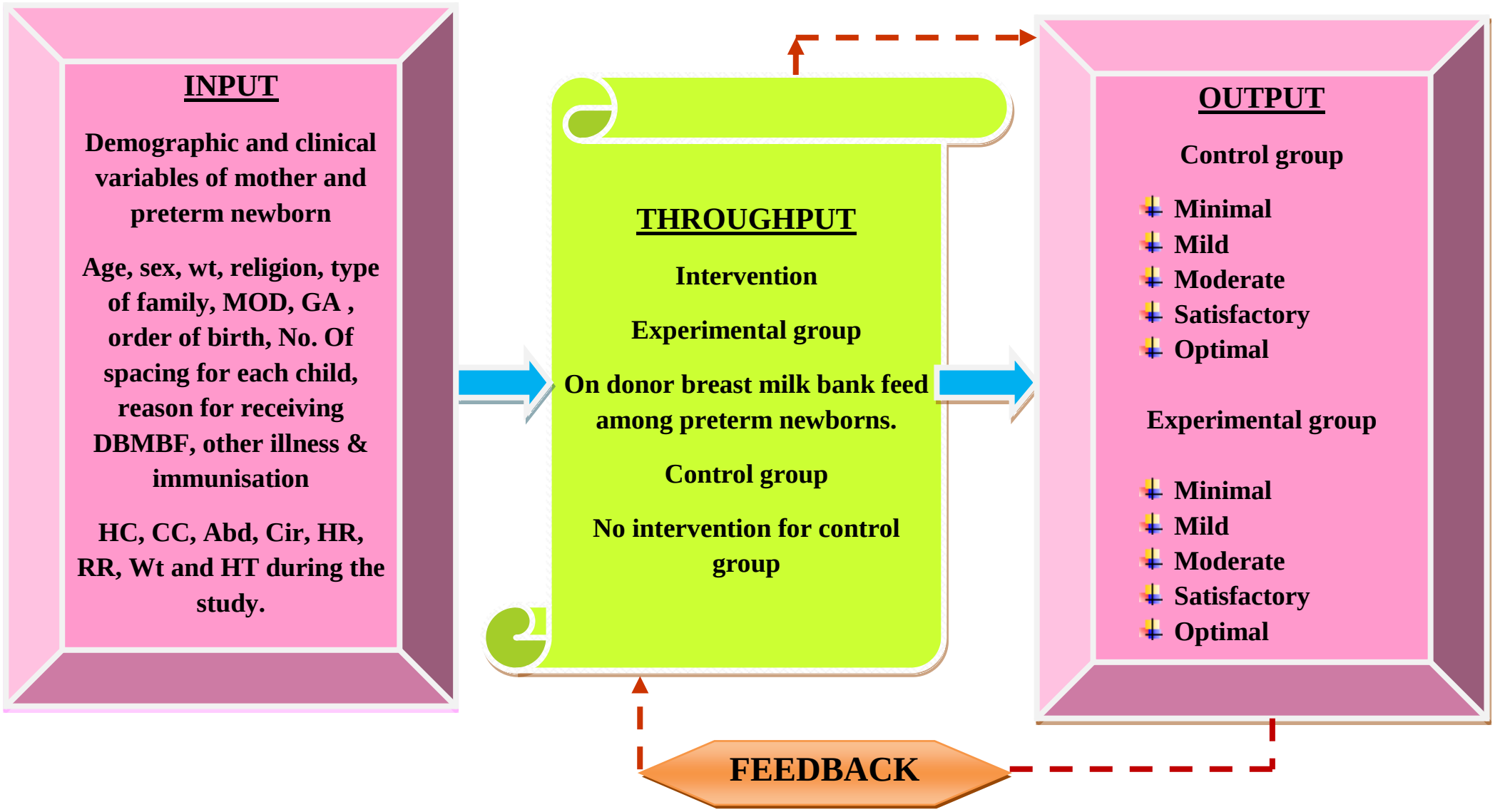


Fig. 2.1. J. W. KENNY'S OPEN SYSTEM MODEL (1991)

CHAPTER - III

METHODOLOGY

This chapter with the methodology followed in the study and it was discussed under the heading research approach, research design, variables, settings, population, sample and sampling technique, development and description of tools, scoring key, content validity, reliability, pilot study, protection of human rights, procedure for data collection, plan for data analysis and interpretation of the results.

RESEARCH APPROACH

The quantitative approach was adopted for this study.

RESEARCH DESIGN

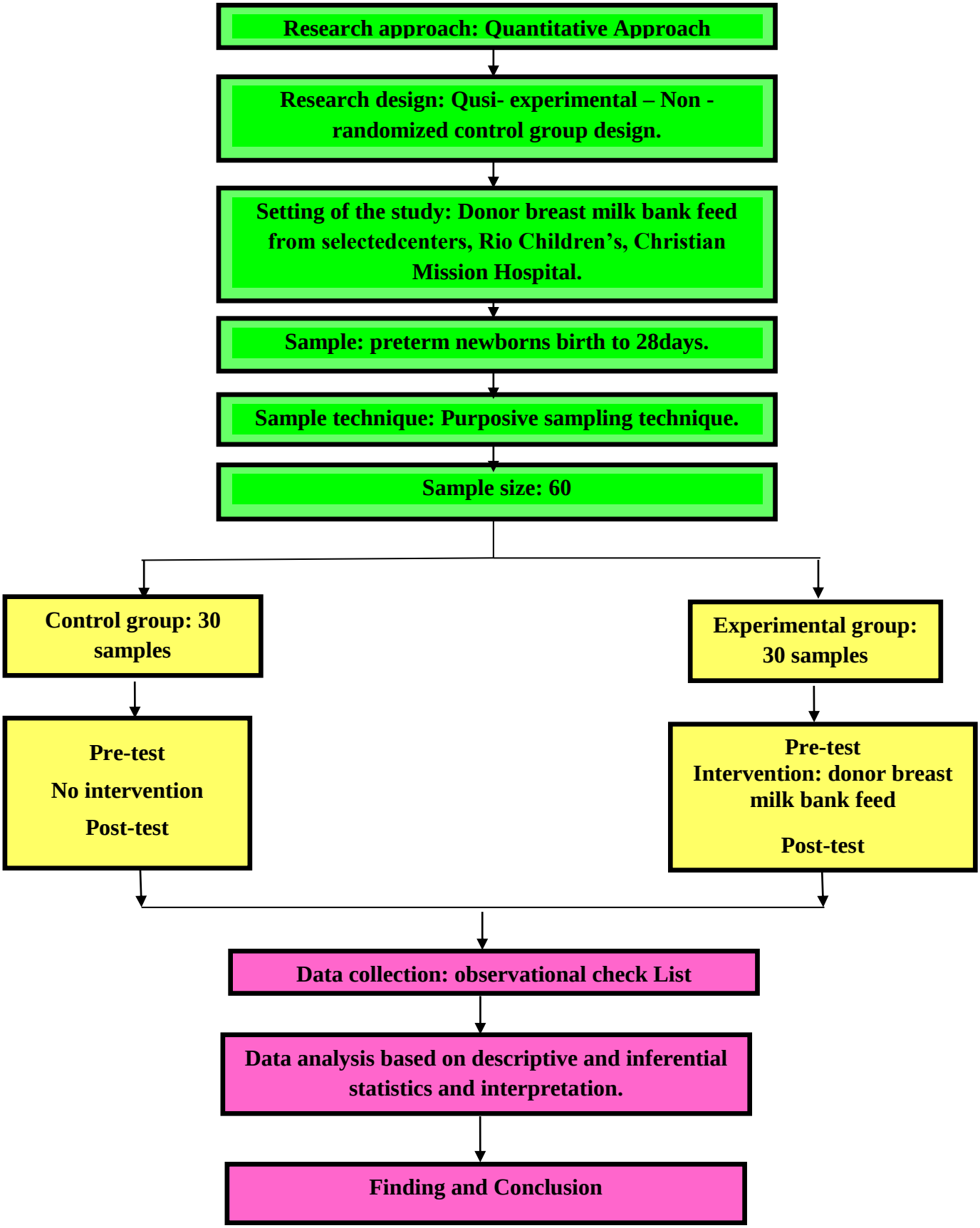
The researcher had chosen the quasi experimental non-randomized control group design to evaluate the effectiveness of donor breast milk feed among preterm newborns.

GROUP	PRE-TEST	INTERVENTION	POST-TEST
E	O_1	Donor breast milk bank feed	O_2
C	O_1	----	O_2

Key

E – Experimental group, C- Control group, O_1, O_2- pre and post-test assessment on control and experimental group, X- Donor breast milk bank feed intervention for experimental group.

3.1 A SCHEMATIC REPRESENTATION OF METHODOLOGY



SETTING OF THE STUDY

The study was conducted from selected Neonatal Intensive Care Unit and donor breast milk bank feed centers and children's hospitals at Madurai. It was 52 Km away from C S I Jeyaraj Annapackiam College of Nursing. For control group samples selected from Rio hospital had 50 beds and Christian Mission hospital had 20 beds in peadiatric department. For experimental group samples selected from Neonatal Intensive Care Unit of donor breast milk bank had 80 beds. The sample selected were preterm newborns from birth to 28 days who were admitted in Neonatal Intensive Care Unit.

POPULATION

Target population

Preterm newborn who were from birth to 28 days the researcher would like to generalize the research findings from selected donor breast milk bank and children hospitals at Madurai.

Accessible population

The accessible population was composed of samples from the target population that are accessible to the researcher as study participants.

Preterm newborns were comes under the birth to 28 days on routine formula feed as control group and the preterm newborns were comes under birth to 28 days on newly started with donor breast milk bank feed on experimental group from selected centers and children's hospitals at Madurai.

SAMPLE

The preterm newborn were fulfilled the inclusion criteria from birth to 28 days from Rio children's hospital and Christian Mission hospitals consider as a control group. And the preterm newborns were fulfilled the inclusion criteria from birth to 28 days from donor breast milk bank center consider as an experimental group.

SAMPLE SIZE

The total 60 samples were selected for this study out of which 30 samples for control group and 30 samples for experimental group.

SAMPLE TECHNIQUE

Sample for the study were selected based on the purposive sampling criteria were used for both control and experimental group in the study set by the investigator.

CRITERIA FOR SAMPLE SELECTION

Inclusion criteria

- Preterm newborn birth to 28 days.
- Preterm newborns were routinely consuming formula feed from 8 am to 6 pm consider as a control group.
- Preterm newborns were comes under newly started with paladai donor breast milk bank feed from 8am to 6pm consider as a experimental group.
- Preterm newborns were unable to receive from their own mothers.
- 10-15 ml routine formula feed amount based on the doctor's order and tolerance of the baby consider as a control group.

- 10-15ml donor breast milk amount based on the doctor's order and tolerance of the baby consider as an experimental group.

Exclusion criteria

- Preterm newborns were restricted for feeding, (NPO).
- Preterm newborns were very sick.
- Preterm newborns were having congenital anomalies
- Preterm newborn were receiving mother's breast milk.
- Preterm newborns were fed through expressed breast milk from own mothers.

DEVELOPMENT OF TOOLS

Data collection tools were the procedure or instruments used by the researcher to observe or measure key variables in the research problem. Based on the objectives of this study the following tool was constructed by the researcher.

DESCRIPTION OF TOOL

The tool was prepared by the investigator on the basis of objectives of the study with the help of review of literature and consultation with experts. Checklist was developed to measure the effectiveness of donor breast milk bank feed on preterm newborns from selected centers and hospitals at Madurai.

The structured questionnaire has two parts

Part I includes 2 parts

- Demographical variables
- Clinical variables

Part I: Section A: Demographic variables: age of the preterm newborn, sex of the preterm newborn, weight of the preterm newborn at birth, height of the preterm newborn at birth religion, type of family, area of residence, mode of delivery, gestational age of the baby, order of birth, number of spacing, preterm newborn receives, reason for receiving the donor breast milk, preterm newborn feeding through, other illness of preterm newborn, and immunization.

Section B: Clinical Variables: head circumference, chest circumference, abdominal circumference, heart rate, and respiration, weight of the baby during the pre and post-test study, and height of the baby during the pre and post-test study.

Part II: Section A: Part II pre-test check list on the routine formula milk feed among preterm newborn. It includes 4 parts. Health status-8, Article sterilization-4, Reflexes assessment without paladai feeding-5, and tolerance-3. Total it consists of 20 statements.

Section B: Post-test check list on the effects of donor breast milk bank feed among preterm newborn. It includes 4 parts. Health status-8, Article sterilization-4, Reflexes assessment without paladai feeding-5, and tolerance3. Total it consists of 20 statements.

SCORING PROCEDURE

Part II

The resulting score is ranged as

Minimal	-	Less than 24
Mild	-	25% - 28%
Moderate	-	29% - 32%
Satisfactory	-	33% - 36%
Optimal	-	37% - 40%

CONTENT VALIDITY OF THE INSTRUMENT

Content validity refers to the degree to which an instrument measures what it is supposed to measure. Validity of the tool was established after expert's opinion from three nursing PhD scholars, medical persons four members, statisticians two, and psychologist one.

The final instruments were reframed after consulting with guide, and statistician. Then the tool and pamphlet were edited by Tamil language expert, translated into Tamil, edited by Tamil language expert.

RELIABIITY OF THE TOOL

The reliability of the effectiveness of preterm newborn on donor breast milk bank was tested by retest method and Cronbach's alpha method respectively. $r = 0.78$, which was found to be reliable. It has positive correlation.

PILOT STUDY

Pilot study was conducted among 6 preterm newborns from selected donor breast milk centers Rio children's hospital, and Christian Mission hospital at Madurai. Formal permission was obtained from the institution ethical committee and the head of the department. Anonymity and confidentiality was maintained while collecting information and oral consent obtained from the samples of mothers. Three preterm newborns in control group and three preterm newborns in experimental group, to evaluate the effectiveness and feasibility of conducting main study. The pilot study helped the investigator to conform the feasibility of carrying out the main study.

METHOD OF DATA COLLECTION

Data collection is the gathering information to address the research problem. Prior permission from authority was sought and the data collection period was for 4 weeks. The study samples were selected by non probability purposive sampling based on sample selection criteria. A total of 60 preterm newborns were selected out of which 30 samples control group and 30 samples for experimental group. The objectives and purposes of the study were explained and oral consent was obtained.

In control group pre-test was conducted to evaluate the preterm newborn on routine formula feed. The time taken was about 20 minutes. Data collection was done through check list method for 28 days from 8 am to 6 pm. There was no intervention for control group. A post-test was conducted for 28 days from 8 am to 6 pm.

In experimental group pre-test was conducted to assess the effectiveness of preterm newborn on donor breast milk bank feed. The time was taken was about 20 minutes. Data collection was done through check list method for 28 days for 8 am to 6

pm. An intervention was given to the experimental group on donor breast milk feed. A post-test was conducted to assess the effectiveness of donor breast milk bank feed. The time was taken about 20 minutes. Data collection was done through check list for 28 days from 8 am to 6 pm. The data collection was terminated by thanking the subjects. The collected data were compiled and analyzed using descriptive and inferential statistics and interpretation were presented in tables and figures.

After completing the observation thanked the both control and experimental group mothers of preterm newborns. As an ethical consideration the researcher educated and gave pamphlet regarding donor breast milk bank feed for control and experimental group of preterm newborns mothers.

PROTECTION OF HUMA RIGHTS

Ethical consideration was taken into account for the purpose of the study. The proposed study was conducted after the approval of the dissertation committee of the C.S.I Jeyaraj Annapackiam College of Nursing. Permission was obtained from the respective authority of selected donor breast milk bank centers Rio children's speciality hospital and Christian Mission hospitals. Each individual mother of preterm newborn was informed about the purpose of the study and confidentiality was promised and oral consent was obtained.

CHAPTER - IV

ANALYSIS AND INTERPRETATION

This chapter deals with the data analysis collected among preterm newborns and interpretation of the present study involves compilation, editing, coding, classification and presentation of the data for statistical calculation in order to draw inferences and conclusions. Using descriptive and inferential statistics, the study objectives were computed.

The data collected from the respondents were organized, tabulated, analyzed and included applying descriptive and inferential statistics based on the objectives.

1. To assess the pre-test and post- test score on donor breast milk bank feed among preterm newborns on control and experimental group.
2. To evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group.
3. To compare the pre-test and post-test score on donor breast milk bank feed among preterm newborn between control and experimental group.
4. To determine the association between the pre-test donor breast milk bank feed among preterm newborns with their selected demographical variables in control and experimental group.
5. To determine the association between the pre-test and post-test donor breast milk bank feed among preterm newborns with their selected clinical variables in control and experimental group.

The study findings were presented with tables and figures under the following captions:

Section I

4.1.1 Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns with their selected demographical variables.

4.1.2a Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns with their selected pre clinical variables.

4.1.2b Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns with their selected pre clinical variables.

Section II

4.1 A Mean SD and mean percentage pre-test and post-test score of control group among preterm newborns from selected centers at Madurai.

4.1 B Mean SD and mean percentage to evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group from selected centers at Madurai in experimental group.

4.1 C Mean SD and mean percentage pre-test score between control group and experimental group among preterm newborns from selected centers at Madurai.

4.1 D Mean SD and mean percentage post-test score between control after routine formula paladai feed and experimental group to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected center at Madurai.

4.1 E Frequency and percentage wise distribution to evaluate the preterm newborn between control group and experimental group on effectiveness of donor breast milk bank feed from selected centers at Madurai.

Section III

4.2.1 Paired “t” test was found in experimental group to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai.

4.2.2 Unpaired “t” was found in pre-test score between control and experimental group among preterm newborns from selected centers at Madurai.

4.2.3 Unpaired “t” was found in post-test between control and experimental group to evaluate the effectiveness of donor breast milk bank feed from selected centers at Madurai.

Section IV

4.3.1 Association between the pre-test score of preterm newborns on donor breast milk bank feed in control and experimental group with their selected demographical variables.

4.3.2 Association between pre-test score among preterm newborns in control and experimental group with their selected clinical variables.

4.3.3 Association between post-test score of donor breast milk bank feed among preterm newborns in control and experimental group with their selected clinical variables.

Section - I

Table: 4.1.1: Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns with their selected demographical variables.

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	F	%	F	%
1. Age of preterm newborn				
a. Birth-7 days	13	43.3	11	36.7
b. 7-14 days	8	26.7	6	20
c. 14- 21 days	6	20	7	23.3
d. 21-22 days	3	10	6	20
2. Sex of the preterm newborn				
a. Male	17	56.7	18	60
b. Female	13	43.3	12	40
3. weight of the preterm at birth				
a. Less than 1000g	5	16.7	5	16.7
b. 1.5-2.5kg	14	46.7	10	33.3
c. 2.5-3 kg	11	36.7	15	50
4. Height of the preterm at birth				
a. Less than 46 cm	5	16.7	11	36.7
b. 47-49 cm	14	46.7	8	26.7
c. 49-51 cm	11	36.7	11	36.7
5. Religion				
a. Hindu	16	53.3	14	46.7
b. Christian	9	30	9	30
c. Muslim	5	16.7	7	23.3
d. Others	0	0	0	0
6. Type of family				
a. Nuclear	21	70	19	63.3
b. Joint	8	26.7	11	36.7
c. Extended	1	3.3	0	0
7. Area of residence				
a. Rural	17	56.7	16	53.3
b. Urban	13	43.3	14	46.7

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	F	%	F	%
8. Mode of delivery				
a. Normal delivery	18	60	13	43.3
b. LSCS	11	36.7	13	43.3
c. Instrumental delivery	1	3.3	4	13.3
9. Gestational age of the preterm newborn				
a. Late preterm baby	18	60	7	23.3
b. Very preterm baby	9	30	16	53.3
c. Extreme preterm baby	3	10	7	23.3
10. Order of birth				
a. First child	13	43.3	12	40
b. Second child	10	33.3	11	36.7
c. Third child	6	23	4	13.3
d. More than 3	1	3.3	3	10
11. Number of spacing for each child				
a. First child	13	43.3	13	43.3
b. 1 year space from 1st child	6	20	9	30
c. 2 years space from 2nd child	5	16.7	6	20
d. More than 3 years	6	20	2	6.7
12. Preterm newborn receive				
a. Paladai donor breast milk	0	0	30	100
b. Paladai formula feed	30	100	0	0
13. Reason for receiving paladai feed				
a. Communicable disease	4	13.3	5	16.7
b. Death of the mothers	3	10	7	23.3
c. No breast milk secretion	23	76.7	14	46.7
d. Sexually transmitted disease	0	0	0	0
e. Blood born disease	0	0	4	13.3
14. Other illness of child (Jundice.URI,LRI)				
a. Yes	9	30	16	53.3
b. No	21	70	14	43.3

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	F	%	F	%
15. Immunization up to age				
a. Yes	23	76.7	17	56.7
b. No	7	23.3	13	43.3

Table 4.1.1: Show the frequency and percentage wise distribution of samples based on their demographical variables of samples in experimental and control group.

Regarding age in control group, 13 (43.3%) samples were between the age group birth to 7 days, 8 (26.7%) samples were between 7 to 14 days, 6 (20%) samples were between the age group 14 to 21 days, 3 (10%) samples were between the age group 21 to 28 days. In experimental group 11 (36.7%) samples were the age group between birth to 7 days, 6 (20%) samples are between the age group 7 to 14 days, 7 (23.3%) samples were between the age group 14 to21 days, 6 (20%) samples were between the age group 21 to 28 days.

Regarding sex of the preterm newborn in control group 17 (56.7%) samples were male, and 13 (43.3%) samples were female. In experimental group 18 (60%) samples were male, and 12 (40%) samples were female.

Regarding weight of the preterm newborn at birth, in control group 5 (16.7%) samples were born less than 1000 grams, 14 (46.7%) samples were born 1.5 to 2.5 kg and 11 (36.7%) samples were born 2.5 to 3 kg. In experimental group 5 (16.7%) samples are born less than 1000 grams, 10 (33.3%) samples were born 1.5 to 2.5 kg and 15 (50%) samples were born 2.5 to 3 kg.

Regarding height of the preterm newborn at birth in control 5 (16.7%) samples were measured less than 46 cm, 14 (46.7%) samples were measured 47 to 49cmand 11 (36.7%) samples were measured 49 to 51 cm. In experimental group 11 (36.7%)

samples were measured less than 46 cm, 8 (26.7%) samples were measured 47 to 49 cm, and 11 (36.7%) samples were measured 49-51 cm.

Regarding religion in control group 16 (53.3%) samples were belongs to Hindu, 9 (30%) samples were belongs to Christian, 5 (16.7%) samples were belongs to Muslim, and none of them samples were belongs to other religions. In experimental group 14 (46.7%) samples were belongs to Hindu, 9 (30%) samples were belongs to Christian, 7 (23.3%) samples were belongs to Muslim, and none of them samples were belongs to other religions.

Regarding type of family in control group 21 (70%) samples are belongs to nuclear family, 8 (26.7%), samples were belongs to joint family and only 1 (3.3%) sample were belongs to extended family. In experimental group 19 (63.3%) samples are belongs to nuclear family, 11 (36.7%) samples were belongs to joint family and no one is belongs to extended family.

Regarding area of residence in control group 17 (56.7%) samples were resides in rural area and 13 (43.3%) samples were resides in urban area. In experimental group 16 (53.3%) samples were resides in rural area and 14 (46.7%) samples were resides in urban area.

Regarding mode of the delivery in control group 18 (60%) samples were born by normal delivery, 11 (36.7%) samples were born by LSCS and 1 (3.3%) samples were born by instrumental delivery. In experimental group 13 (43.3%) samples were born by normal delivery, 13% (43.3%) samples were born by LSCS and 4 (13.3%) samples were born by instrumental delivery.

Regarding gestational age of the preterm newborn 18 (60%) samples were born at late preterm baby 9 (30%), samples were born at very preterm baby, and 3

(10%) samples were born at extreme preterm. In experimental group 7 (23.3%) samples were born at late preterm baby 16 (53.3%), samples were born at very preterm baby, and 3 (23.3%) samples were born at extreme preterm.

Regarding order of the birth in control group 13 (43.3%) samples birth order was first child, 10 (33.3%) samples birth order was second child, 6 (23%) samples birth order was third child and 1 (3.3%) samples birth order more than 3 child. In control group 12 (40%) samples birth order was first child, 11 (36.7%) samples birth order was second child, 4 (13.3%) samples birth order was third child and 3 (10%) samples birth order more than 3 child.

Regarding number of spacing for each child in control group 13 (43.3%) samples were in first child, 6 (20%) samples were between 1 year space from 1st child, 5 (16.7%) samples were born between 2 year space and 6 (20%) samples were born more than 3 years. In experimental group 13 (43.3%) samples are in first child, 9 (30%) samples were between 1 year space from 1st child, 6 (20%) samples were born between 2 year space and 2 (6.7%) samples were born more than 3 years.

Regarding preterm newborn as a routine formula feed receive in control group 30 (100%). In experimental group 30 (100%) samples were received paladai formula feed.

Regarding reason for receiving the formula milk feed in control group 4 (13.3%) sample were received due to communicable diseases of mother, 3 (10%) sample were received due to death of the mother, 23 (76.7%) sample were received due to breast milk secretion, none of the samples are belongs to sexually transmitted diseases, and none of the samples are belongs to blood born diseases. In experimental group 5 (16.7%) sample were received due to communicable diseases of mother, 7

(23.3%) sample were received due to death of the mother, 14 (46.7%) sample were received due to breast milk secretion, none of the samples were belongs to sexually transmitted diseases, and 4 (13.3%) samples were received due to blood born diseases.

Regarding other illness of the child like (jaundice. URI, LRI) in control group 9 (30%) samples had illness and 21 (70%) samples had no illness. In experimental group 16 (53.3%) samples had illness and 14 (43.3%) samples had no illness like (jaundice. URI, LRI).

Regarding immunization up to the age in control group 23 (76.7%) samples were immunized and 7 (23.3%) were not immunized. In experimental group 17 (56.7%) samples were immunized and 13 (43.3%) were not immunized.

Section - I

Table: 4.1.2a: Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns with their selected pre clinical variables.

Clinical variables	Control group (n=30)		Experimental group (n=30)	
	F	%	F	%
1. Head circumference				
a. 33-35 cm	21	70	17	57
b. 35-38 cm	9	30	13	43
2. chest circumference				
a. 30-33 cm	17	57	13	43
b. 33-35 cm	13	43	17	57
3. Abdominal circumference				
a. Normal 33 cm	17	57	10	33.3
b. Below 33 cm	9	30	3	10
c. Above 33 cm	4	13	17	57
4. Heart rate				
a. Normal 120-160 b/mts	13	43.3	16	53.3
b. Below 120 b/mts	9	30	5	16.7
c. Above 160 b/mts	8	26.7	9	30
5. Respiration				
a. Normal 40-60 b/mts	15	50	13	43.3
b. Below 40 b/mts	8	26.7	6	20
c. Above 60 b/mts	7	23.3	11	36.7
6. Weight of the preterm newborn				
a. Less than 1000 grams	8	26.7	7	23.3
b. 1.5-2.5 kg	10	33.3	10	33.3
c. 2.5-3 kg	12	40	13	43.3
7. height of preterm newborn				
a. Less than 46 cm	5	16.7	12	40
b. 47-49 cm	10	33.3	8	26.7
c. 49-51 cm	15	50	10	33.3

Table: 4.1.2: Shows the frequency and percentage wise distribution of samples based on clinical variables of samples in control group and experimental group. Regarding head circumference in control group 21 (70%) sample were belongs to 33-35 cm and 9 (30%) samples were belongs to 35-38 cm. In experimental group

17 (57%) sample were belongs to 33-35 cm and 13 (43%) samples were belongs to 35-38 cm.

Regarding chest circumference in control group 17 (57%) sample were belongs to 30-33 cm and 13 (43%) samples were belongs to 33-35 cm. In experimental group 13 (43%) sample were belongs to 30-33 cm and 17 (57%) samples were belongs to 33-35 cm.

Regarding abdominal circumference in control group 17 (57%) samples were belongs to 33 cm, 9 (30%) samples were belongs to below 33 cm and 4 (13%) samples were belongs to above 33 cm. In experimental group 10 (33.3%) samples were belongs to 33 cm, 3 (10%) samples were belongs to below 33 cm and 17 (57%) samples were belongs to above 33 cm.

Regarding heart rate in control group 13 (43.3%) sample were belongs to 120-160 b/mts, 9 (30%) samples were belongs to below 120 b/mts and 8 (26.7%) samples were belongs to above 160 b/mts. In experimental group 16 (53.3%) sample were belongs to 120-160 b/mts, 5 (16.7%) samples were belongs to below 120 b/mts and 9 (30%) samples were belongs to above 160 b/mts.

Regarding respiration in control group 15 (50%) sample were belongs to 40-60 b/mts, 8 (26.7%) samples were belongs to below 40 b/mts and 7 (23.3%) samples were belongs to above 60 b/mts. In experimental group 13 (43.3%) sample were belongs to 40-60 b/mts, 6 (20%) samples were belongs to below 40 b/mts and 11 (36.7%) samples were belongs to above 60 b/mts.

Regarding weight of the preterm newborn in post in control group 8 (26.7%) samples are less than 1000 grams, 10 (33.3%) samples were weight between 1.5-2.5 kg, and 12 (40%) samples were weight between 2.5-3 kg. In experimental group 7

(26.7%) samples were less than 1000 grams, 10 (33.3%) samples were weight between 1.5-2.5 kg, and 13 (43.3%) samples were weight between 2.5-3 kg.

Regarding height of the preterm newborn in post-test in control group 5 (16.7%) samples were less than 46 cm, 10 (33.3%) samples were measured between 47-49 cm and 15 (50%) samples measured between 49-51 cm. In experimental group 12 (40%) samples were less than 46 cm, 8 (26.7%) samples were measured between 47-49 cm and 10 (33.3%) samples measured between 49-51 cm.

Section - I

Table: 4.1.2b: Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns with their selected post clinical variables.

Clinical variables	Control group (n=30)		Experimental group (n=30)	
	F	%	F	%
1. Head circumference				
a. 33-35 cm	18	60	20	67
b. 35-38 cm	12	40	10	33
2. chest circumference				
a. 30-33 cm	13	43	18	60
b. 33-35 cm	17	57	12	40
3. Abdominal circumference				
a. Normal 33 cm	17	57	20	67
b. Below 33 cm	10	33	7	23
c. Above 33 cm	3	10	3	10
4. Heart rate				
a. Normal 120-160 b/mts	13	43.3	16	53.3
b. Below 120 b/mts	9	30	5	16.7
c. Above 160 b/mts	8	26.7	9	30
5. Respiration				
a. Normal 40-60 b/mts	15	50	13	43.3
b. Below 40 b/mts	8	26.7	6	20
c. Above 60 b/mts	7	23.3	11	36.7
6. Weight of the preterm newborn				
a. Less than 1000 grams	6	20	3	10
b. 1.5-2.5 kg	12	40	20	67
c. 2.5-3 kg	12	40	7	23
7. Height of preterm newborn				
a. Less than 46 cm	6	20	2	7
b. 47-49 cm	6	20	18	60
c. 49-51 cm	18	60	10	33

Table: 4.1.2b: Shows the frequency and percentage wise distribution of samples based on clinical variables of samples in control group and experimental group. Regarding head circumference in control group 18 (60%) sample were belongs to 33-35 cm and 12 (40%) samples were belongs to 35-38 cm. In experimental group

20 (67%) sample were belongs to 33-35 cm and 10 (33%) samples were belongs to 35-38 cm.

Regarding chest circumference in control group 13 (43%) sample were belongs to 30-33 cm and 17 (57%) samples were belongs to 33-35 cm. In experimental group 18 (60%) sample were belongs to 30-33 cm and 12 (40%) samples were belongs to 33-35 cm.

Regarding abdominal circumference in control group 17 (57%) samples were belongs to 33 cm, 10 (33%) samples were belongs to below 33 cm and 3 (10%) samples were belongs to above 33 cm. In experimental group 20 (67%) samples were belongs to 33 cm, 7 (23%) samples were belongs to below 33 cm and 3 (10%) samples were belongs to above 33 cm.

Regarding heart rate in control group 13 (43.3%) sample were belongs to 120-160 b/mts, 9 (30%) samples were belongs to below 120 b/mts and 8 (26.7%) samples were belongs to above 160 b/mts. In experimental group 16 (53.3%) sample were belongs to 120-160 b/mts, 5 (16.7%) samples were belongs to below 120 b/mts and 9 (30%) samples were belongs to above 160 b/mts.

Regarding respiration in control group 15 (50%) sample were belongs to 40-60 b/mts, 8 (26.7%) samples were belongs to below 40 b/mts and 7 (23.3%) samples were belongs to above 60 b/mts. In experimental group 13 (43.3%) sample were belongs to 40-60 b/mts, 6 (20%) samples were belongs to below 40 b/mts and 11 (36.7%) samples were belongs to above 60 b/mts.

Regarding weight of the preterm newborn in post in control group 6 (20%) samples are less than 1000 grams, 12 (40%) samples were weight between 1.5-2.5 kg, and 12 (40%) samples were weight between 2.5-3 kg. In experimental group 3 (10%)

samples were less than 1000 grams, 20 (67%) samples were weight between 1.5-2.5 kg, and 7 (23.3%) samples were weight between 2.5-3 kg.

Regarding height of the preterm newborn in post-test in control group 6 (20%) samples were less than 46 cm, 6 (20%) samples were measured between 47-49 cm and 18 (50%) samples measured between 49-51 cm. In experimental group 2 (7%) samples were less than 46 cm, 18 (60%) samples were measured between 47-49 cm and 10 (33.3%) samples measured between 49-51 cm.

Section- 2

4.1 A: Mean SD and mean percentage pre-test and post-test score of control group among preterm newborns from selected centers at Madurai.

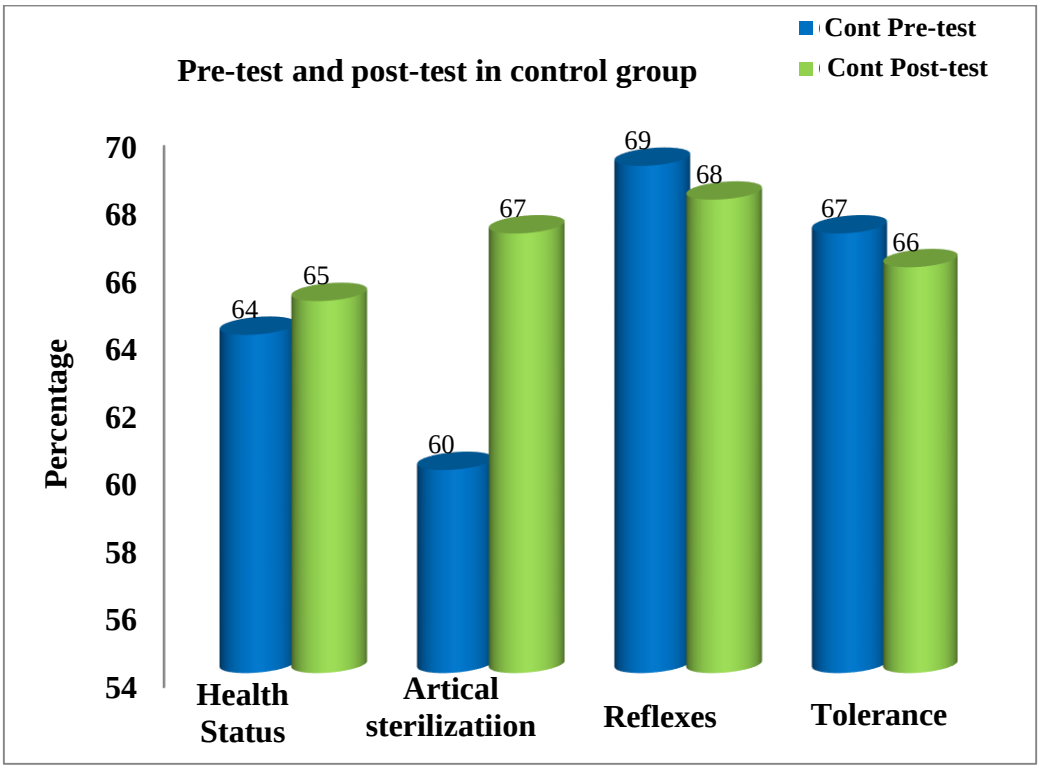


Figure: 4.1.A: Displays the mean percentage difference of pretest and post test in control group among preterm newborns in control group. The results shows that the pretest mean percentage for the health status was 64% lower than the post test mean percentage 65%, for article sterilization was 60% in pretest higher than post test mean percentage 67%, for reflexes assessment mean percentage was 69% lower than the post test mean percentage 68%, for tolerance mean percentage was 67% in pretest higher than post test mean percentage 66%.

The result inferred that the preterm newborn in control group had mild level improvement, without intervention among preterm newborn.

Figure: 4.1 B Mean, SD and mean percentage to evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group from selected centers at Madurai in experimental group.

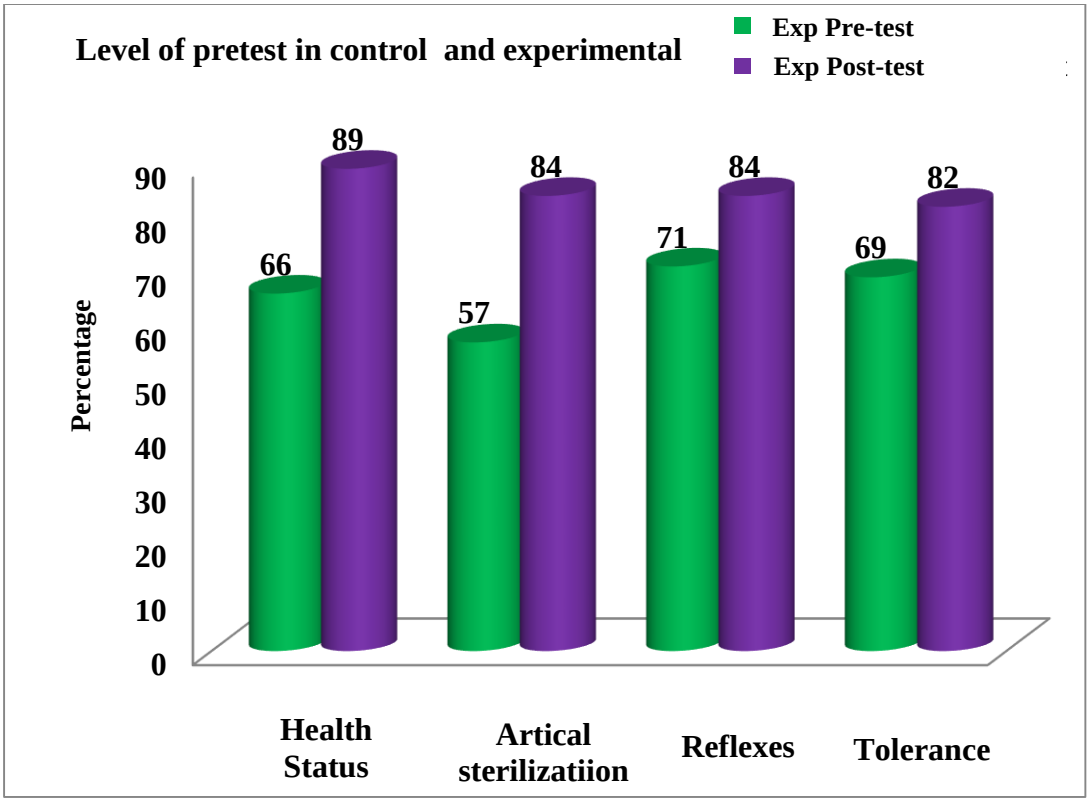


Figure: 4.1 B: Displays the mean percentage difference of pre-test and post-test on effectiveness of donor breast milk bank feed among preterm newborns in experimental group. The results shows that the pre-test mean percentage for the health status was 66% lower than the post-test mean percentage 89%, for article sterilization was57% in pre-test lower than post-test mean percentage 84%, for reflexes assessment without paladai feeding mean percentage was 71% lower than the post-test mean percentage 84%, for tolerance mean percentage was 69%in pre-test lower than post-test mean percentage 82%.

The result inferred that the preterm newborn in experimental group have improved in donor breast milk bank feed among preterm newborn.

Figure-4.1 C: Mean SD and mean percentage pre-test score between control group and experimental group among preterm newborns from selected centers at Madurai.

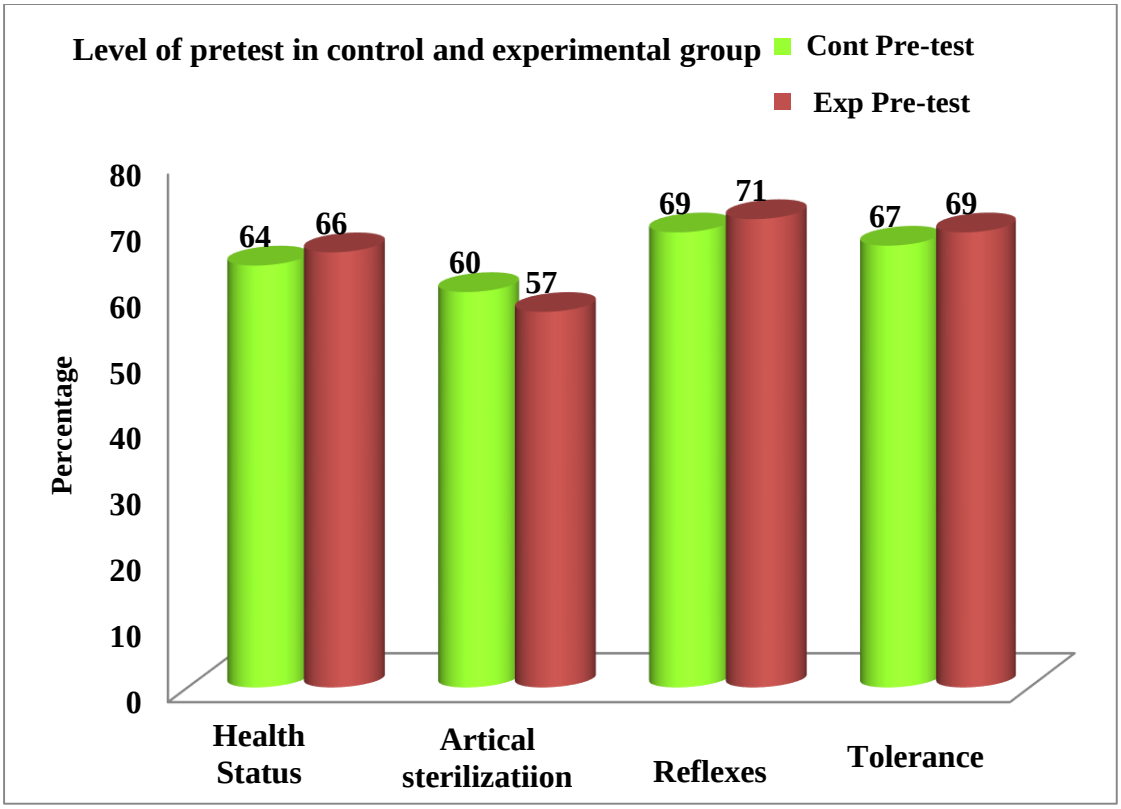


Figure: 4.1 C: Displays the mean percentage difference of pre-test control group and experimental group among preterm newborn. The results shows that the pre-test mean percentage in control group for the health status mean score was 64% lower than the experimental pre-test mean percentage 66%, for article sterilization in control group pre-test mean percentage was 60% lower than the experimental pre-test mean percentage was 57%. For reflexes assessment mean percentage in control group pre-test was 69% higher than the experimental group pre-test mean percentage was 71%, for tolerance mean percentage in control group pre-test was 67% lower than the experimental group pre-test mean percentage was 69%.

The result inferred that the preterm newborn in experimental group have improved in donor breast milk bank feed.

Figure: 4.1 D Mean SD and mean percentage post-test score between control after routine formula paladai feed and experimental group effectiveness of donor breast milk bank feed among preterm newborns from selected center at Madurai.

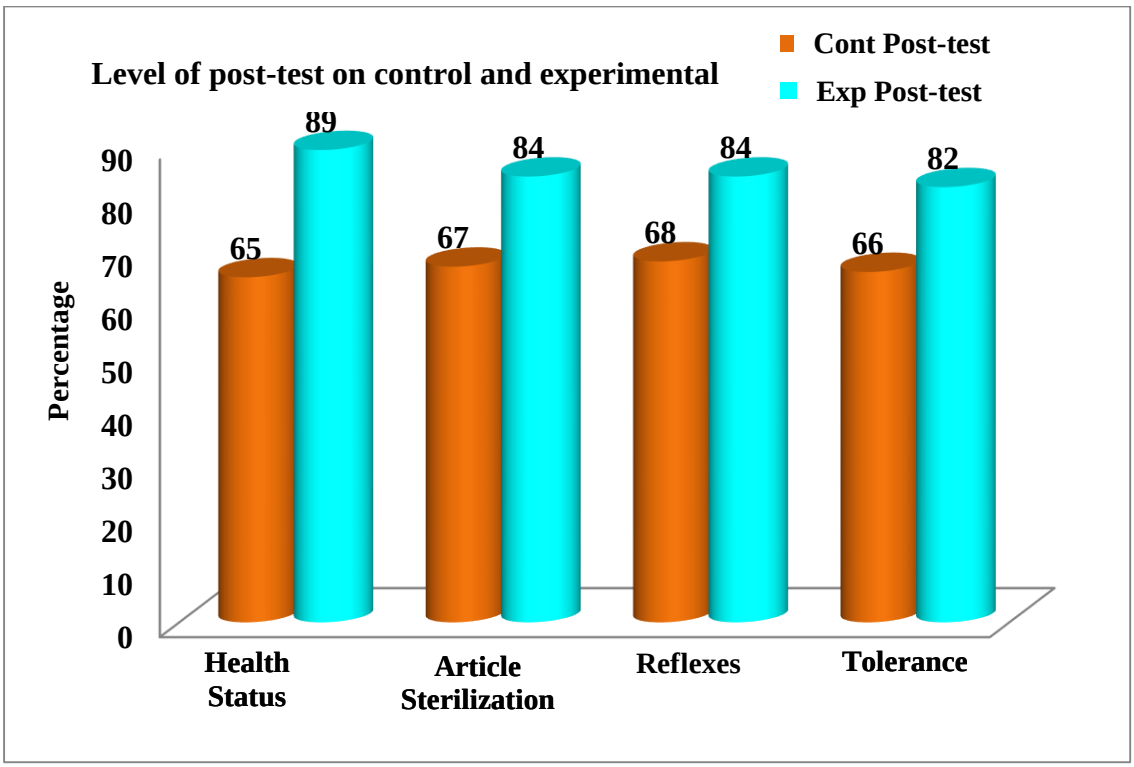


Figure-4.1 D: Displays the mean percentage difference of post-test on effectiveness of donor breast milk bank feed among preterm newborns in the control group and experimental group. The results shows that the post-test mean percentage in control group for the health status mean score was 65% lower than the experimental post-test mean percentage 89%, for article sterilization in control group post-test mean percentage was 67% lower than the experimental post-test mean percentage was 84%. For reflexes assessment mean percentage in control group post-test was 68% higher than the experimental group post-test mean percentage was 84%, for tolerance mean percentage in control group post-test was 66% lower than the experimental group post-test mean percentage was 82%. The result inferred that the preterm newborn in experimental group had improved level in donor breast milk bank feed.

Figure: 4.1 E: Frequency and percentage wise distribution evaluate the effectiveness of donor breast milk bank feed among preterm newborns between control and experimental group from selected centers at Madurai.

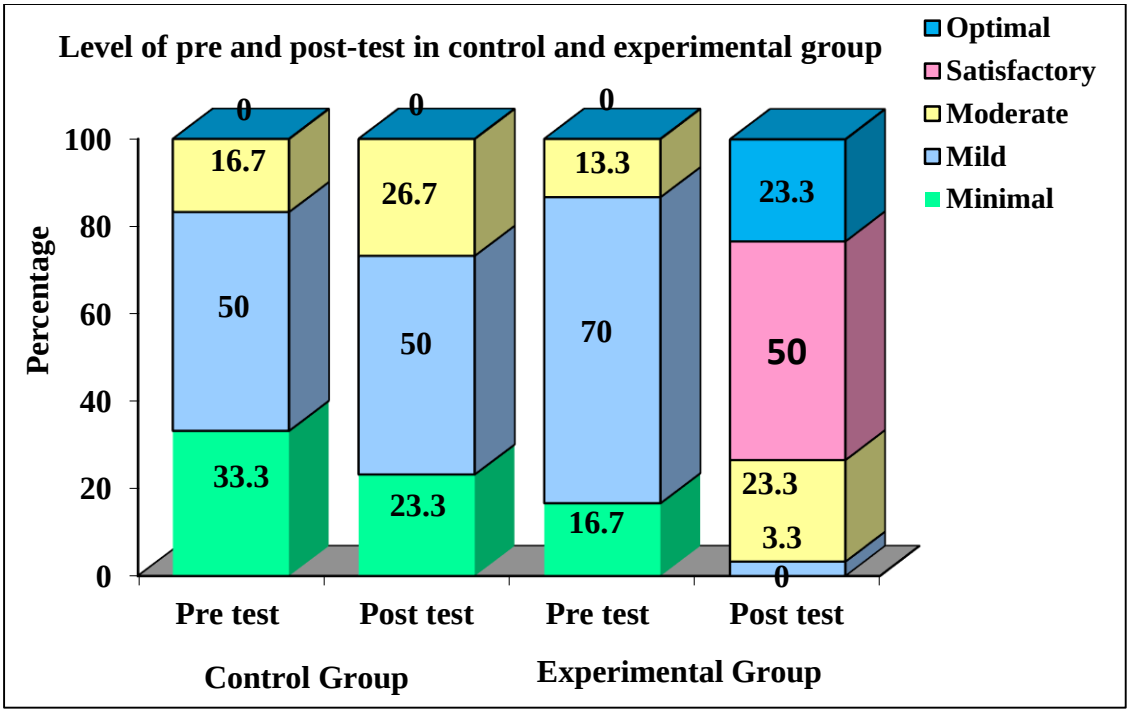


Figure-4.1 E: Depicted the frequency and percentage wise distribution evaluate the feeds of preterm newborns in control and experimental group. In control group pre-test revealed that 33.3% subject had minimal level of improvement on routine formula paladai feed, 50% subject had mild level of improvement on routine formula paladai feed, and 16.7% subject had moderate level of improvement on routine formula paladai feed. In post-test revealed that 23.3% subject had minimal level of improvement on routine formula paladai feed, 50% subject had mild level of improvement on routine formula paladai feed, and 26.7% subject had moderate level of improvement on routine formula paladai feed.

In experimental group pre-test revealed that 16.7% subject had minimal level of improvement on donor breast milk bank feed, 70% subject had mild level of improvement on donor breast milk feed, and 13.3% subject had moderate level of

improvement on donor breast milk feed. In post-test revealed that 3.3% subject had mild level of improvement on donor breast milk bank feed 23.3% subject had moderate level of improvement on donor breast milk feed, 50% subject had satisfactory level of improvement on donor breast milk feed, 23.3% subject had optimal level of improvement on donor breast milk feed and no improvement in minimal level of donor breast milk bank feed.

Section III

Table-4.2.1: Paired‘t’ test was found in experimental group to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai

Area	Experimental pre test		Experimental post-test		Mean difference	‘t’-value	P-value
	Mean	SD	Mean	SD			
Health status	10.53	1.01	14.17	1.59	3.63	10.17	p<0.001***
Articles sterilization	4.57	0.68	6.73	1.01	2.17	9.41	p<0.001***
Reflexes	7.07	1.21	8.37	1.29	1.3	3.83	p<0.001***
Tolerance	4.13	0.94	4.9	0.80	0.77	3.35	p<0.001***
Overall	26.3	2.05	34.17	2.56	7.87	14.57	p<0.001***

*-P<0.05, significant and **-P<0.01 &***-P<0.001, highly significant

Table-4.2.1: Depicted that, paired ‘t’ test was found in experimental group to evaluate the effectiveness of group donor breast milk ban feed among preterm newborn in selected centers Centre at Madurai

In experimental group mean pre-test score for health status 10.53 (SD=1.01) and the post-test score was 14.17 (SD=1.59) the obtained t value is 10.17, and the p value 0.001. Which is statistically significant level at P<0.001. For articles sterilization in pre-test 4.57 (SD=0.68) and the post-test score 6.73 (SD=1.01) the obtained t value is 9.41, and the p value 0.001. Which is statistically significant level at P<0.001. For reflexes assessment without donor breast milk bank paladai feeding in pre-test 7.07 (SD=1.21) and for reflexes assessment with donor breast milk bank paladai feeding the post-test score 8.37 (SD=1.29) the obtained t value is 3.83, and the p value 0.001. Which is statistically significant level at P<0.001. For tolerance in pre-test 4.13 (SD=0.94) and the post-test score 4.9 (SD=0.80) the obtained t value is 3.35,

and the p value 0.001. Which is statistically significant level at P<0.001. The overall paired t test score in experimental group in pre-test 26.3 (SD=2.05), and post-test 34.17 (2.56) the obtained t value 14.57, p value 0.001. Which is statistically level at p<0.001.

Table-4.2.2: Unpaired "t" was found in pre-test score between control and experimental group among preterm newborns from selected centers at Madurai.

Area	Control pre test		Experimental pre test		Mean difference	't'-value	P-value
	Mean	SD	Mean	SD			
Health status	10.17	1.26	10.53	1.01	0.37	1.24	0.218
Articles sterilization	4.77	0.73	4.57	0.68	0.2	1.10	0.27
Reflexes	6.93	1.31	7.07	1.21	0.13	0.41	0.68
Tolerance	4.03	0.96	4.13	0.94	0.1	0.407	0.68
Overall	25.9	2.75	26.3	2.05	0.4	0.638	0.525

*-P<0.05, significant and **-P<0.01 &***-P<0.001, highly significant

Table-4.2.2: depicted that**,** Unpaired't' test was found in pre-test of between control and experimental group before feeds among preterm newborn from selected centers at Madurai.

In control group mean pre-test score for health status 10.17 (SD=1.26) and the experimental pre-test score was 10.53 (SD=1.01) the obtained t value is 1.24, and the p value 0.218. Which is not statistically significant level at P<0.001. For articles sterilization in control pre-test4.77 (SD=0.73) and the experimental pre-test score 4.57 (SD=0.68) the obtained t value is 1.10, and the p value 0.27. Which is statistically not significant level at P<0.001. For reflexes assessment without paladai feeding in control group pre-test 6.93 (SD=1.31) and for reflexes the experimental pre-test score 7.07 (SD=1.21) the obtained t value is 0.41, and the p value 0.68. Which is not statistically significant level at P<0.001. For tolerance in control pre-test4.03 (SD=0.96) and the experimental pre-test score 4.13 (SD=0.94) the obtained t value is 0.47, and the p value 0.68. Which is statistically not significant level at P<0.001. The overall unpaired t test score in control group in pre-test 26.3 (SD=2.05), and experimental pre-test test 26.3 (2.05) the obtained t value 0.638, p value 0.525. Which is statistically level at p<0.001.

Table-4.2.3: Unpaired‘t’ test was found in post-test score between control and experimental group to evaluate the effectiveness of donor breast milk bank feed from selected Centres at Madurai

Area	Control post test		Experimental post-test		Mean difference	‘t’-value	P-value
	Mean	SD	Mean	SD			
Health status	10.43	1.45	14.17	1.59	3.73	9.45	**p<0.001*** **
Articles sterilization	5.33	1.12	6.73	1.01	1.4	5.06	**p<0.001*** **
Reflexes	6.8	1.35	8.37	1.29	1.57	4.58	**p<0.001*** **
Tolerance	3.97	0.93	4.9	0.80	0.93	4.17	**p<0.001*** **
Overall	26.53	2.91	34.17	2.56	7.63	10.78	**p<0.001*** **

*-P<0.05, significant and **-P<0.01 &***-P<0.001, highly significant

Table-4.2.3: Depicted that**,** unpaired‘t’ test was found in post-test of between control group after routine formula paladai feed and experimental group after donor breast milk bank in selected Centre at Madurai.

In control group mean post-test score for health status 10.43 (SD=1.45) and the experimental post-test score was 14.17 (SD=1.59) the obtained t value is 9.45, and the p value 0.001. Which is statistically significant level at P<0.001. For articles sterilization in control post-test 5.33 (SD=1.12) and the experimental post-test score 6.73 (SD=1.01) the obtained t value is 5.06, and the p 0.001 value. Which is statistically significant level at P<0.001. For reflexes assessment in control group post-test 6.8 (SD=1.35) and post-test score 8.37 (SD=1.29) the obtained t value is 4.58, and the p value 0.001. Which is statistically significant level at P<0.001. For tolerance in control post-test3.97 (SD=0.93) and the experimental post-test score 4.9 (SD=0.80) the obtained t value is 4.17, and the p value 0.001. Which is statistically significant level at P<0.001. The overall unpaired t test score in control group in post-test 26.53 (SD=2.91), and experimental post-test 34.17 (SD=2.56) the obtained t value 10.78 p value 0.001. Which is statistically significant level at p<0.001.

Section IV

Table: 4.3.1: Association between the pre-test score of preterm newborns on donor breast milk bank feed in control and experimental group with their selected demographical variables.

Demographic variables	Minimal		Mild		Moderate		$\chi 2$ (df)	p-value (N/NS)
	F	%	F	%	F	%		
1. Age of preterm newborn								
a. Birth-7 days	4	13.3	7	23.3	2	6.7	5.41 (df=6)	0.492 NS
b. 7-14 days	4	13.3	3	10	1	3.3		
c. 14- 21 days	2	6.7	2	6.7	2	6.7		
d. 21-22 days	0	0	3	10	0	0		
2. Sex of the preterm newborn								
a. Male	5	16.7	9	30	3	10	0.271 (df=2)	0.873 NS
b. Female	5	16.7	6	20	2	6.7		
3. Weight of the preterm newborn at birth								
a. Less than 1000g	2	6.7	3	10	0	0	1.98 (df=4)	0.736 NS
b. 1.5-2.5kg	5	16.7	7	23.3	2	6.7		
c. 2.5-3 kg	3	10	5	16.7	3	10		
4. Height of the preterm newborn at birth								
a. Less than 46 cm	3	10	2	6.7	0	0	2.47 (df=4)	0.650 NS
b. 47-49 cm	4	13.3	7	23.3	3	10		
c. 49-51 cm	3	10	6	20	2	6.7		

Demographic variables	Minimal		Mild		Moderate		$\chi 2$ (df)	p-value (N/NS)
	F	%	F	%	F	%		
5. Religion								
a. Hindu	6	20	8	26.7	2	6.7		
b. Christian	2	6.7	4	13.3	3	10	3.14	0.535
c. Muslim	2	6.7	3	10	0	0	(df=4)	NS
d. Others	0	0	0	0	0	0		
6. Type of family								
a. Nuclear	9	30	8	26.7	4	13.3	8.24	0.083
b. Joint	0	0	7	23.3	1	3.3	(df=4)	NS
c. Extended	1	3.3	0	0	0	0		
7. Area of residence								
a. Rural	7	23.3	6	20	4	13.3	3.94	0.413
b. Urban	3	10	9	30	1	3.3	(df=2)	NS
8. Mode of delivery								
a. Normal delivery	6	20	9	30	3	10	2.18	0.702
b. LSCS	3	10	6	20	2	6.7	(df=4)	NS
c. Instrumental delivery	1	3.3	0	0	0	0		
9. Gestational age of the preterm newborn								
a. Late preterm baby	7	23.3	8	26.7	3	10	3.50	0.478
b. Very preterm baby	3	10	4	13.3	2	6.7	(df=4)	NS
c. Extreme preterm baby	0	0	3	10	0	0		
10. Order of birth								
a. First child	6	20	5	16.7	2	6.7		
b. Second child	1	3.3	7	23.3	2	6.7	5.33	0.502
c. Third child	3	10	2	6.7	1	3.3	(df=6)	NS
d. More than 3	0	0	1	3.3	0	0		

Demographic variables	Minimal		Mild		Moderate		$\chi 2$ (df)	p-value (N/NS)
	F	%	F	%	F	%		
11. Number of spacing for each child								
a. First child	6	20	5	16.7	2	6.7	6.73 (df=6)	0.346 NS
b. 1 year space from	3	10	3	10	0	0		
c. years space from	0	0	3	10	2	6.7		
d. More than 3 years	1	3.3	4	13.3	1	3.3		
12. Preterm newborn receive								
a. Paladai donor breast milk	0	0	0	0	0	0	0 (df=1)	1 NS
b. Paladai formula feed	10	33.3	15	50	5	16.7		
13. Reason for receiving the paladai feeding								
a. Communicable disease	1	3.3	2	6.7	1	3.3	0.961 (df=4)	0.916 NS
b. Death of the mothers	1	3.3	2	6.7	0	0		
c. No breast milk secretion	8	26.7	1	3.3	4	13.3		
d. Sexually transmitted disease	0	0	0	0	0	0		
e. Blood born disease	0	0	0	0	0	0		
14. Other illness of child (jaundice, LRI, URI)								
a. Yes	4	13.3	2	6.7	3	10	4.60 (df=2)	0.10 NS
b. No	6	20	13	43.3	2	6.7		
15. Immunization up to age:								
a. Yes	8	26.7	11	36.7	4	13.3	0.18 (df=2)	0.911 NS
b. No	2	6.7	4	13.3	1	3.3		

Table: 4.3.1: shows that there is no significant association between the donor breast milk bank feed and the demographical variables.

Table no: 4.3.2: Association between pre-test score among preterm newborns between control and experimental group with their selected clinical variables.

Clinical variables	Minimal		Mild		Moderate		$\chi 2$ (df)	p-value (N/NS)
	F	%	F	%	F	%		
1. Head circumference								
a. 33-35 cm	5	16.7	12	40	4	13.3	3.86	0.426
b. 35-38 cm	5	16.7	3	10	1	3.3	(df=4)	NS
2. Chest circumference								
a. 30-33 cm	3	10	11	36.7	3	10	5.67	0.225
b. 33-35 cm	7	23.3	4	13.3	2	6.7	(df=4)	NS
3. Abdominal circumference								
a. Normal 33 cm	7	23.3	7	23.3	3	10		
b. Below 33 cm	2	6.7	6	20	1	3.3	1.83	0.765
c. Above 33 cm	1	3.3	2	6.7	1	3.3	(df=4)	NS
4. Heart rate								
a. Normal 120-160 b/mts	3	10	8	26.7	2	6.7		
b. Below 120 b/mts	2	6.7	5	16.7	2	6.7	4.45	0.349
c. Above 160 b/mts	5	16.7	2	6.7	1	3.3	(df=4)	NS
5. Respiration								
a. Normal 40-60 b/mts	5	16.7	7	23.3	3	10		
b. Below 40 b/mts	3	10	5	16.7	0	0	2.47	0.65
c. Above 60 b/mts	2	6.7	3	10	2	6.7	(df=4)	NS
6. Weight of the preterm newborn								
a. Less than 1000 grams	3	10	5	16.7	0	0	2.78 (df=4)	0.596 NS
b. 1.5-2.5 kg	4	13.3	4	13.3	2	6.7		
c. 2.5-3 kg	3	10	6	20	3	10		
7. Height of the preterm newborn								
a. Less than 46 cm	3	10	2	6.7	0	0	3.73 (df=4)	0.443 NS
b. 47-49 cm	2	6.7	5	16.7	3	10		
c. 49-51 cm	5	16.7	8	26.7	2	6.7		

Table no: 4.3.2: shows that there was no significant association between the donor breast milk bank feed and the clinical variables.

Table: 4.3.3: Association between post-test score of donor breast milk bank feed among preterm newborns in control and experimental group with their selected clinical variables.

Clinical variables	Minimal		Mild		Moderate		χ^2 (df)	p-value (N/NS)
	F	%	F	%	F	%		
1. Head circumference								
a. 33-35 cm	4	13.3	11	36.7	2	6.7	1.33	0.512
b. 35-38 cm	1	3.3	10	33.3	2	6.7	(df=2)	NS
2. Chest circumference								
a. 30-33 cm	3	10	9	30	1	3.3	1.11	0.573
b. 33-35 cm	2	6.7	12	40	3	10	(df=2)	NS
3. Abdominal circumference								
a. Normal 33 cm	2	6.7	6	20	2	6.7		
b. Below 33 cm	2	6.7	0	0	1	3.3	10.74	0.030*
c. Above 33 cm	1	3.3	15	50	1	3.3	(df=4)	S
4. Heart rate								
a. Normal 120-160 b/mts	3	10	12	40	1	3.3		
b. Below 120 b/mts	2	6.7	2	6.7	1	3.3	5.25	0.262
c. Above 160 b/mts	0	0	7	23.3	2	6.7	(df=4)	NS
5. Respiration								
a. Normal 40-60 b/mts	2	6.7	9	30	2	6.7		
b. Below 40 b/mts	1	3.3	5	16.7	0	0	1.28	0.865
c. Above 60 b/mts	2	6.7	7	23.3	2	6.7	(df=4)	NS
6. Weight of the baby in post								
a. Less than 1000 grams	2	6.7	3	10	2	6.7		
b. 1.5-2.5 kg	1	3.3	8	26.7	1	3.3	3.45	0.485
c. 2.5-3 kg	2	6.7	10	33.3	1	3.3	(df=4)	NS
7. Height of the baby in post								
a. Less than 46 cm	3	10	7	23.3	2	6.7		
b. 47-49 cm	1	3.3	7	23.3	0	0	2.93	0.569
c. 49-51 cm	1	3.3	7	23.3	2	6.7	(df=4)	NS

Table: 4.3.3: shows that there was a significant association between the donor breast milk bank feed and the clinical variables in abdominal circumference 0.030*

CHAPTER - V

DISCUSSION

The present study was conducted to evaluate the effectiveness of donor breast milk bank feed among pre term preterm newborn in selected centers at Madurai. After the analysis and interpretation of the data obtained from the samples, the researcher found, there was a significant improvement in the donor breast milk bank feed.

The discussion about the study results are solely based on the objectives:

1. To assess the pre-test and post-test score on donor breast milk bank feed among preterm newborns on control and experimental group.
2. To evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group.
3. To compare the pre-test and post-test score on donor breast milk bank feed among preterm newborn between control and experimental group.
4. To determine the association between the pre-test donor breast milk bank feed among preterm newborns with their selected demographical variables in control and experimental group.
5. To determine the association between the pre-test and post-test donor breast milk bank feed among preterm newborns with their selected clinical variables in control and experimental group.

Hypothesis:

H_1: There is a significant difference between the pre-test and post-test score on donor breast milk bank feed in experimental group.

H_2: There is a significant difference between the pre-test and post-test score on donor breast milk bank feed in control and experimental group.

H_3: There is a significant association between the pre-test score on donor breast milk bank feed among preterm newborn with their selected demographical variables in control and experimental group.

H_4: There is a significant association between the pre-test and post-test score on donor breast milk bank feed among preterm newborn with their selected clinical variables in control and experimental group.

Frequency and percentage wise distribution to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai according to their demographic data.

The characteristics of the demographic variables regarding the study findings revealed that among 60 preterm newborn. Regarding age in control group, 13 (43.3%) samples were between the age group birth to 7 days, 8 (26.7%) samples were between 7 to 14 days, 6 (20%) samples were between the age group 14 to 21 days, 3 (10%) samples were between the age group 21 to 28 days. In experimental group 11 (36.7%) samples were the age group between birth to 7 days, 6 (20%) samples are between the age group 7 to 14 days, 7 (23.3%) samples were between the age group 14 to21 days, 6 (20%) samples were between the age group 21 to 28 days.

Regarding sex of the preterm newborn in control group 17 (56.7%) samples were male, and 13 (43.3%) samples were female. In experimental group 18 (60%) samples were male, and 12 (40%) samples were female.

Regarding weight of the preterm newborn at birth, in control group 5 (16.7%) samples were born less than 1000 grams, 14 (46.7%) samples were born 1.5 to 2.5 kg and 11 (36.7%) samples were born 2.5 to 3 kg. In experimental group 5 (16.7%) samples are born less than 1000 grams, 10 (33.3%) samples were born 1.5 to 2.5 kg and 15 (50%) samples were born 2.5 to 3 kg.

Regarding height of the preterm newborn at birth in control 5 (16.7%) samples were measured less than 46 cm, 14 (46.7%) samples were measured 47 to 49cmand 11 (36.7%) samples were measured 49 to 51 cm. In experimental group 11 (36.7%) samples were measured less than 46 cm, 8 (26.7%) samples were measured 47 to 49 cm, and 11 (36.7%) samples were measured 49-51 cm.

Regarding religion in control group 16 (53.3%) samples were belongs to Hindu, 9 (30%) samples were belongs to Christian, 5 (16.7%) samples were belongs to Muslim, and none of them samples were belongs to other religions. In experimental group 14 (46.7%) samples were belongs to Hindu, 9 (30%) samples were belongs to Christian, 7 (23.3%) samples were belongs to Muslim, and none of them samples were belongs to other religions.

Regarding type of family in control group 21 (70%) samples are belongs to nuclear family, 8 (26.7%), samples were belongs to joint family and only 1 (3.3%) sample were belongs to extended family. In experimental group 19 (63.3%) samples are belongs to nuclear family, 11 (36.7%) samples were belongs to joint family and no one is belongs to extended family.

Regarding area of residence in control group 17 (56.7%) samples were resides in rural area and 13 (43.3%) samples were resides in urban area. In experimental group 16 (53.3%) samples were resides in rural area and 14 (46.7%) samples were resides in urban area.

Regarding mode of the delivery in control group 18 (60%) samples were born by normal delivery, 11 (36.7%) samples were born by LSCS and 1 (3.3%) samples were born by instrumental delivery. In experimental group 13 (43.3%) samples were born by normal delivery, 13% (43.3%) samples were born by LSCS and 4 (13.3%) samples were born by instrumental delivery.

Regarding gestational age of the preterm newborn 18 (60%) samples were born at late preterm baby 9 (30%), samples were born at very preterm baby, and 3 (10%) samples were born at extreme preterm. In experimental group 7 (23.3%) samples were born at late preterm baby 16 (53.3%), samples were born at very preterm baby, and 3 (23.3%) samples were born at extreme preterm.

Regarding order of the birth in control group 13 (43.3%) samples birth order was first child, 10 (33.3%) samples birth order was second child, 6 (23%) samples birth order was third child and 1 (3.3%) samples birth order more than 3 child. In control group 12 (40%) samples birth order was first child, 11 (36.7%) samples birth order was second child, 4 (13.3%) samples birth order was third child and 3 (10%) samples birth order more than 3 child.

Regarding number of spacing for each child in control group 13 (43.3%) samples were in first child, 6 (20%) samples were between 1 year space from 1st child, 5 (16.7%) samples were born between 2 year space and 6 (20%) samples were born more than 3 years. In experimental group 13 (43.3%) samples are in first child, 9

(30%) samples were between 1 year space from 1st child, 6 (20%) samples were born between 2 year space and 2 (6.7%) samples were born more than 3 years.

Regarding preterm newborn as a routine formula feed receive in control group 30 (100%). In experimental group 30 (100%) samples were received paladai formula feed.

Regarding reason for receiving the formula milk feed in control group 4 (13.3%) sample were received due to communicable diseases of mother, 3 (10%) sample were received due to death of the mother, 23 (76.7%) sample were received due to breast milk secretion, none of the samples are belongs to sexually transmitted diseases, and none of the samples are belongs to blood born diseases. In experimental group 5 (16.7%) sample were received due to communicable diseases of mother, 7 (23.3%) sample were received due to death of the mother, 14 (46.7%) sample were received due to breast milk secretion, none of the samples were belongs to sexually transmitted diseases, and 4 (13.3%) samples were received due to blood born diseases.

Regarding other illness of the child like (jaundice. URI, LRI) in control group 9 (30%) samples had illness and 21 (70%) samples had no illness. In experimental group 16 (53.3%) samples had illness and 14 (43.3%) samples had no illness like (jaundice. URI, LRI).

Regarding immunization up to the age in control group 23 (76.7%) samples were immunized and 7 (23.3%) were not immunized. In experimental group 17 (56.7%) samples were immunized and 13 (43.3%) were not immunized.

Rojjanasrirat and Wilaiporn (2014) at Bihar: A study is to determine the knowledge and the views of the mothers towards milk banking. This study is a cross-sectional survey. The study was carried out with 404 mothers who gave birth in a two

maternity hospitals and one university hospital in Izmir using the face-to-face interview technique between March 2014 and June 2014. The study data were collected using a 30-item socio-demographic questionnaire. Result: The mothers' mean age was 28.4 years (16–46 years). Of the mothers, 45.5% were primary school graduates, 80.2% were members of a nuclear family, 75.7% had less than three children, 63.4% gave birth by caesarean section and only 79.5 percent were able to breastfeed before being discharged. Of the mothers, 41.6% were aware of milk banking, 71.3% were willing to receive milk bank services and 68.8% were willing to donate breast milk.

The first objective was to assess the pre-test score on donor breast milk bank feed among preterm newborns on control and experimental group.

The study findings revealed that among 60 preterm in control group 7 (23.3%) minimal level of improve health of donor breast milk bank feed, 15 (50%) mild level of improve health of donor breast milk bank feed, 8 (26.7%) moderate level of improve health of donor breast milk bank feed.

In experimental group 1 (3.3%) mild level of donor breast milk bank feed, 7 (23.3%) moderate level of donor breast milk bank feed, 15 (50%) satisfactory level of improve health of donor breast milk bank feed, and 7 (23.3%) optimal level of donor breast milk bank feed. H_1: There is a significant difference between the pre-test and post-test score on donor breast milk bank feed in experimental group. Hence the research hypothesis (H_1) is accepted.

This study was supported **Cochrane Library January, (2010) at Australia:** A study was conducted to assess the impact of opening a milk bank in the neonatal unit on the proportion of infants receiving exclusive breast milk at discharge.50 infants born before the opening of milk bank and 54 infants born after the opening of

a milk bank were selected as samples. The data was collected about the hospital stay, hours of stay, hours of life when feeding was started, hours of life when full enteral feeding was attained, type of milk received during admission and type of feeding on dicharge.The results shows that proportion of infants receiving exclusive breast milk in first group was 54% and second group was 56%. The study concluded that opening of donor milk banking in a neonatal unit did reduce the proportion of infants exclusively feed with breast milk at discharge but did reduce the proportion of infants that received infant formula during the first four weeks of life.

The second objective was to evaluate the effectiveness of donor breast milk bank feed among preterm newborns in experimental group.

The study findings revealed that the overall mean value of the pre-test 26.3 after the donor breast milk bank feed the mean value post-test 34.17. The obtained value of difference 7.87 which is highly significant. The findings of the study demonstrated a significant increase in post-test donor breast milk bank feed in all aspects. This conforms the donor breast milk bank feed was effective. H_2: There is a significant difference between the donor breast milk bank feed in experimental and control group Hence the research hypothesis (H_2) is accepted.

This study was supported **RM Nicholl, HR Gamsu et al 1999 at Delhi:** A study regarding the effect of adding a commercially prepared milk fortifier to human (maternal or bank) milk and measured changes in lower leg length velocity (LLLvel) using anemometry, weight gain and biochemical indices of nutrition. Babies were allocated to one of three feed groups, in a semi-randomized fashion, to receive human milk alone (group I), fortified human milk (group II) or a preterm formula (group III). Result: All babies who received fortified milk either showed significant ($p = 0.0004$) acceleration in lower leg length velocity during the period studied, or maintained their

pre-study period velocity. This increase in lower leg length velocity was comparable to that achieved by a group of babies given a standard preterm infant formula ($p < 0.001$). By comparison, the control group's change in lower leg length velocity was more modest ($p = 0.04$). Babies who received human milk with the fortifier added had the lowest serum levels of alkaline phosphates at the end of the study period determination of human milk protein profile usable for nursery milk bank and fortification and showed the importance of milk bank.

The third objective was to compare the pre-test and post-test score on donor breast milk bank feed among preterm newborn between control and experimental group.

The third object aimed to compare the level of donor breast milk bank feed among preterm newborn in experimental and control group. The unpaired‘t’ test value of overall in pre-test 0.638 (525). The unpaired‘t’ test value of overall in post-test 10.78 (0.001). The findings concluded that with there is significant difference in the donor breast milk bank feed among preterm newborn in control and experimental group.

This study was supported **William S Hark 2006 at Patna:** Formula milk versus donor breast milk for feeding preterm or low birth weight infants. There was no evidence of an effect on long-term growth rates or neuro developmental outcomes. Meta-analysis of data from five trials demonstrated a statistically significantly higher incidence of necrotizing enterocolitis in the formula fed group: typical relative risk 2.5 (95% confidence interval 1.2, 5.1); typical risk difference: 0.03 (95% confidence interval 0.01, 0.06; number needed to harm: 33 (95% confidence interval 17, 100).

The fourth objective was to determine the association between the pre-test donor breast milk bank feed among preterm newborns with their selected demographical variables in control and experimental group.

The fourth objective concentrated to find out the association between the donor breast milk bank feed with their demographical variables. The data reasoning revealed that, there is an association exists between type of the family and immunization of the samples with the donor breast milk bank feed with chi square value of 8.09 (P=0.017), and 6.23 (P=0.04) respectively. With the donor breast milk bank feed score, it expound that there is an association exists between type of family and immunization.

The result of the present study thus concluded that, association exists between the samples demographical variables like type of family and Immunization with their donor breast milk bank feed. H_3: There is a significant association between the pre-test score on donor breast milk bank feed among preterm newborn with their selected demographical variables. Hence the research hypothesis (H_3) is accepted.

This study was supported **Yadav S, Rawal G, (2015) at US:** The breast milk is the most important source of nutrition for the infants. The human breast milk banks can work efficiently and are cost effective. Besides, not much of human workforce has to be involved into such banks. Result: On the importance of human breast milk banks in the management of premature infants. This paper highlights the importance of the human breast milk banks and also gives insights about various factors associated with it.

The fifth objective was to determine the association between the pre-test and post-test donor breast milk bank feed among preterm newborns with their selected clinical variables in control and experimental group.

The fifth objective concentrated to find out the association between the pre-test and post-test on donor breast milk bank feed with their clinical variables. The data reasoning revealed that, there is an association exists between abdominal circumference of the samples with the donor breast milk bank feed with chi square value of 10.74 (0.030) respectively. With the donor breast milk bank feed score, it expound that there is an association exists between abdominal circumference.

The result of the present study thus concluded that, association exists between the samples demographical variables like abdominal circumference with their donor breast milk bank feed. H_4: There is a significant association between the pre-test and post-test score on donor breast milk bank feed among preterm newborn with their selected clinical variables in control and experimental group. Hence the research hypothesis (H_4) is accepted.

This study was supported **J Pediatr (Rio J), (2017)at Brazil**: Prevalence and factors associated with breast milk donation in banks that receive human milk in primary health care units Cross-sectional study carried out in 2017. A representative sample of 695 mothers of children younger than 1 year attended to at the nine primary health care units with human milk donation services were interviewed. A hierarchical approach was used to obtain adjusted prevalence ratios by Poisson regression. Results: The final model included the variables associated with breast milk donation ($p \leq 0.05$). 7.3% of the mothers had donated breast milk.

CHAPTER-VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

The focus of the study was to assess the effectives of donor breast milk bank feed among preterm newborn from selected centers and hospitals. The research approach used in the study was quasi experimental.

SUMMARY

The study was pre-test post-test control group design was based upon J.W.Kenny's open system model. The instrument used for data collection was checklist of donor breast milk bank feed and formula feed. The instrument was prepared based on review of literature and with the help of subject experts. Reliability of the tool was elicited by using Split Half method. The statistical analysis, Karl Pearson coefficient was found to be 'r' value was 0.78 which was positively correlated. Therefore the instrument was found to be reliable.

A purposive sampling was used to collect data from the study participants. Data was collected for a period of 4 weeks. Data collection was planned and collected the data by using the checklist. The main study was conducted at Theni.

Descriptive and inferential statistical were used to analyze the data. The data was presented using table and graphs.

CONCLUSION

- The effect of donor breast milk bank feed in the experimental group was significantly higher after the donor breast milk bank feed.

- In experimental group 3.3% had Mild effect, 23.3% had moderate effect, 50% had satisfactory effect, and 23.3% had optimal effect on donor breast milk bank feed among preterm newborns.
- Paired overall‘t’ value in experimental group 14.57 and $p<0.001$ was highly significant.
- Unpaired overall‘t’ value in pre test between control and experimental group 0.638 and $p = 0.525$ was no significant.
- Unpaired overall‘t’ value in post-test between control and experimental group 10.78 and $p<0.001$ was highly significant.
- There was no significant association between the pre-test on donor breast milk bank feed of preterm newborns in control group with their selected demographical variables**.**
- There was a significant association between the pre-test on donor breast milk bank feed of preterm newborns in experimental group with their selected demographical variables.(type of family and immunization)
- There was no significant association between the pre and post-test on donor breast milk bank feed of preterm newborns in control group with their selected clinical variables.
- There was a significant association between the pre and post-test on donor breast milk bank feed of preterm newborns in experimental group with their selected clinical variables (normal abdominal circumference).

IMPLICATION

The study has the following implication for nursing service, nursing administration, nursing education and nursing research.

Implication for nursing service:

1. The findings suggest that nurse should increase their knowledge on early and management of donor breast milk bank feed among preterm newborn.
2. This study recommends that nurses should increases focus on preterm newborn health with a view to prevent and manage the donor breast milk bank feed centers.
3. These findings suggest that mothers should emphasize to increase focus on preterm newborn immunity, physical development, psychological development and social development.
4. The study emphasizes that postnatal mothers, and health care members should be taught about effectiveness of donor breast milk feed among preterm newborns.

Implications for nursing administration:

1. This study suggests that nurse administrators should conduct in service education for the nursing staff regarding donor breast milk bank feed and its management.
2. These findings will help the administrator to implement health education programme on donor breast milk bank feed during hospitalization.
3. The findings of study emphasize the nurse administration to conduct various mass awareness programmes focusing on donor breast milk feed among postnatal mothers.

Implication for nursing education:

1. The study enhances the nursing curriculum to provide opportunities for students to learn about donor breast milk bank feed.
2. The study will enable the student nurse to acquire knowledge about donor breast milk bank feed and management.
3. Plan for mass media programmes on donor breast milk bank feed among nursing students to bring awareness to the society.

Implication for nursing research:

1. As there is prevalence of donor breast milk bank feed throughout the country, more research need to be conducted in the hospitals.
2. The association between various other determinants and donor breast milk bank feed can be explored.
3. The study can be published in journals to disseminate knowledge regarding of donor breast milk bank centers and availability.

LIMITATION

- Limited to selected preterm newborns only.
- Donor breast milk bank centers accessibility was very low.
- Generalization of the study findings was limited, due to sample size.

RECOMMENDATION

1. Study can be done in urban and rural hospitals.
2. A similar study can be done on a large sample using a structured programme in hospitals settings.
3. Awareness can be given among postnatal mothers.
4. Awareness can be brought among health personals.

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APPENDIX – A

LETTER FOR SEEKING EXPERTS OPINION FOR CONTENT VALIDITY

From,

P. LAKSHMI PRIYA,
II M. Sc Nursing Student,
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

To,

Forwarded Through,

The Principal
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

Respected Sir/ Madam,

Sub: Requisition for opinion and suggestion of experts for establishing content validity of research tool-reg.

With due regards, I kindly bring to your notice that I am a post graduate student of the C. S. I Jeyaraj Annapackiam College of Nursing, Madurai. I selected the below mentioned topic for dissertation to be submitted to the Tamil Nadu Dr. M. G.R. Medical University, Chennai, as a part of partial fulfilment for the Master of Science in Nursing.

"A study to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai"

I am in need of your valuable opinions and suggestions regarding the tool which I have prepared. So I humbly request you to spare a little of your precious time to validate the tool, for which I will remain ever grateful to you.

Thanking you in anticipation,

Place: Madurai. Yours sincerely,

Date: (P.LAKSHMI PRIYA)

APPENDIX – B

LETTER FOR SEEKING PERMISSION TO CONDUCT THE PILOT STUDY

From

P. LAKSHMI PRIYA,
II M. Sc Nursing Student,
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

To

Forwarded Through
The Principal,
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

Respected Sir/ Madam,

Sub: Seeking permission to conduct the pilot study for research- reg.

With due regards, I kindly bring to your notice that i am a post graduate student of the C. S. I Jeyaraj Annapackiam College of Nursing, Madurai. I selected the below mentioned topic for dissertation to be submitted to the Tamil Nadu Dr. M.G.R Medical **A study to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai"**

I would like to conduct my pilot study in your esteemed institution. Hence I request kind me permission for the same.

Thanking you in anticipation,

Place: Madurai. Yours sincerely,

Date: (P.LAKSHMI PRIYA)

APPENDIX – C

LETTER SEEKING PERMISSION TO CONDUCT THE RESEARCH STUDY

From

P. LAKSHMI PRIYA,
II M. Sc Nursing Student,
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

.

To

Forwarded Through

The Principal,
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

Respected Sir/ Madam,

Sub: Seeking permission to conduct the research study- reg.

With due regards, I kindly bring to your notice that i am a post graduate student of the C. S. I Jeyaraj Annapackiam College of Nursing, Madurai. I selected the below mentioned topic for dissertation to be submitted to the Tamil Nadu Dr. M. G. R. Medical University, Chennai, as a part of partial fulfilment for the Master of Science in Nursing.

"A study to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai"."

I would like to conduct my study in your esteemed institution. Hence I request kind me permission for the same.

Thanking you in anticipation,

Place: Madurai. Yours sincerely,

Date: (P.LAKSHMI PRIYA)

APPENDIX- D

CERTIFICATE OF VALIDATION

This is to certify that the tool developed by **Ms. P.Lakshmi Priya**, final year M.Sc Nursing student of C.S.I. Jeyaraj Annapackiam College of Nursing, Madurai (affiliated to the Tamil Nadu Dr.M.G.R. Medical University) is validated by the undersigned and he can proceed with this tool and conduct the main study for dissertation entitled **"A study to evaluate the effectiveness of donor breast milk bank feed among preterm newborns from selected centers at Madurai."**

Place:

Signature

Date:

Name:

Designation:

Address:

APPENDIX- E

LETTER SEEKING PERMISSION TO CONDUCT RESEARCH

C.S.I. JEYARAJ ANNAPACKIAM COLLEGE OF NURSING AND ALLIED SCIENCES

(Diocese of Madurai & Ramnad)

MERRY DEW HILLS, JONESPURAM, PASUMALAI, MADURAI - 4.

(Affiliated to The Tamil Nadu Dr. M.G.R. Medical University (RC. No. 21179/ Affln (3)/93) & Recognized by Indian Nursing Council (F.No. 18-29/2155 - INC)

Rt. Rev. Dr. M. Joseph, M.A., B.G.L., B.D., M.Th., Ph.D.,

Bishop - Chairman

Ph : 0452 - 2370676, 2371741 Fax : 0452 - 2370676, 2373057 E-mail : jaconmadurai@yahoo.co.in

Prof. Dr. C. Jothi Sophia, M.Sc., (N) RN. RM., Ph.D.,
Professor cum Principal

Rev. Banninga Washburn
Correspondent

To

The Dean,

Theni Medical College,

Theni.

Respected Sir,

Sub: Seeking permission to conduct the research study- reg.

With due regards, I kindly bring to your notice that my post graduate student had selected the below mentioned topic for dissertation to be submitted to the Tamil Nadu Dr. M. G.R.Medical University, Chennai, as a part of partial fulfilment for the Master of Science in Nursing.

"A comparative study to assess the effectiveness of donor breast milk bank feed among infants from selective centers at Theni."

Kindly permit her to do the study in your institution.

Thanking you in anticipation,

Place: Madurai.

Yours sincerely,

Date: 05.05.18

(Prof.Dr. C. JOTHI SOPHIA)

Principal
Prof. Cum Principal
C.S.I. Jeyaraj Annapackiam College of Nursing and Allied Sciences
Merry Dew Hills, Jonespuram
Pasumalai, Madurai - 625 004

APPENDIX – F

LIST OF EXPERTS FOR CONTENT VALIDITY OF THE TOOL

1. **Dr. (Mrs). Selva Pramila, M.B.B.S. DCH, DNB**

   Department of Paediatrics,

   Christian Mission Hospital,

   Madurai.

2. **Prof. Dr. (Mrs). Jothi Sophia. M.Sc (N)., Ph. D.,**

   Principal

   C.S.I Jeyarai Annapaciam College of Nursing

   Madurai.

3. **Prof. Dr. Y. John Sam Arun Prabu, M.Sc (N)., Ph. D.,**

   HOD of Community Department

   C.S.I Jeyarai Annapaciam College of Nursing

   Madurai.

4. **Prof. (Mrs). Helen Mary Perdita, M.Sc (N)., Ph. D.,**

   Principal

   Madurai Apollo college of Nursing

   Madurai.

5. **Mr. Mani, M.Sc, M. Phil.,**

   Bio – statistician

   Bangalore

APPENDIX – G

INSTRUMENT

Part I Section A: NOTE: The researcher was assess the sample one by one and the researcher will write the appropriate answer in the given box.

Date:- _____ **subject no:-** _____

Section A: Demographical variables of infant

1. Age of the preterm newborn
    a. Birth – 7 days
    b. 7 days – 14 days
    c. 14 days – 21 days
    d. 21 days – 28 days
2. Sex of the preterm newborn
    a. Male
    b. female
3. Weight of the preterm at birth
    a. Less than 1000 grams
    b. 1.5 – 2 kg
    c. 2.5 – 3 kg
4. Height of the preterm at birth
    a. Less than 46 cm
    b. 47 – 49 cm
    c. 49 – 51 cm

5. Religion
    a. Hindu
    b. Christian
    c. Muslim
    d. Others
6. Type of family
    a. Nuclear family
    b. Joint family
7. Area of residence
    a. Rural
    b. Urban
8. Mode of delivery
    a. Normal delivery
    b. LSCS
    c. Instrumental delivery
9. Gestational age of the preterm newborn
    a. Late Preterm baby (between 34 – 37 weeks)
    b. Very preterm baby (less than 32 weeks)
    c. Extreme preterm baby (less than 28 weeks)
10. Order of birth
    a. First child
    b. Second child
    c. Third child
    d. More than 3

11. Number of spacing for each child

    a. First child

    b. 1 year space from 1st child

    c. 2 years space from 1st child

    d. More than 3 years

12. Preterm newborn receive

    a. Paladai Donor breast milk

    b. Paladai Formula feed

13. Reason for receiving paladai feeding

    a. Communicable diseases

    b. Death of the mother

    c. No breast milk secretion

    d. Sexually transmitted disease, if yes specify ……..

    e. Blood born diseases if yes specify ……..

14. Other illness of child (Jaundice, URI,LRI)

    a. Yes

    b. No

    c. If yes specify …….

15. Immunization up to the age

    a. Yes

    b. No

Part I Section B: pre and post assessment of clinical variables

CHECK LIST TO ASSESS THE EFFECTIVENESS OF DONOR BREAST MILK BANK FEED AMONG NEWBORN.

NOTE: The researcher will check the following checklist on recipient preterm newborn.

Section B: Clinical variables:

1. Head circumference
    a. 33 – 35 cm
    b. 35 – 38 cm
2. Chest circumference
    a. 30 – 33 cm
    b. 33 – 35 cm
3. Abdominal circumference
    a. Normal 33 cm
    b. Below 33 cm
    c. Above 33 cm
4. Heart rate
    a. Normal 120 – 160 b/mts
    b. Below 120 b/mts
    c. Above 160 b/mts
5. Respiration
    a. Normal 40 – 60 b/mts
    b. Below 40 b/mts
    c. Above 60 b/mts

6. Weight of the preterm newborn during the pre and post study Specify
    a. Less than 1000 grams
    b. 1.5 – 2 kg
    c. 2.5 – 3 kg
7. Height of the preterm newborn during the pre and post study Specify
    a. Less than 46 cm
    b. 47 – 49 cm
    c. 49 – 51 cm

APPENDIX – F

Part II Section A: Pre test check list on donor breast milk bank feed among Preterm newborn in control group.

NOTE: The researcher will check the following checklist on recipient preterm newborn.

S.NO	OBERVATIONAL CHECK LIST	YES	NO
	Health status:		
1.	Preterm newborn looks healthy.		
2.	Normal skin color present.		
3.	Normal body temperature maintained at 96.4 ℃ to 98.6 ℃		
4.	Preterm newborn hydrated well.		
5.	Normal muscle tone maintained.		
6.	The preterm newborn lies in a relax attitude and limbs more extended.		
7.	Screened milk		
8.	Umbilical cord looks healthy.		
	Articles sterilization:		
9.	Investigator wash hands before start the paladai feeding.		
10.	Wash feeding articles		
11.	Sterilize feeding articles before feed.		
12.	Before the feed the milk kept at room temperature (28 ℃).		
	Reflexes assessment without paladai feeding:		
13.	Rooting reflex the preterm newborn who automatically turn the face toward the stimulus		
14.	Sucking reflex of the preterm newborn's lips elicited by touching them.		
15.	Swallowing is a combination of a voluntary act.		
16.	Active response for touch stimuli.		
17.	Active response for play stimuli.		
	Tolerance:		
18.	Peristaltic movement present.		
19.	Urine output 6- 10 wet nappies in 24 hours.		
20.	Appearance and frequency of stools in 2 – 4 times in 24 hours.		

Pre test assessment check list on the formula milk among Preterm newborn experimental group.

S.NO	OBERVATIONAL CHECK LIST	YES	NO
	Health status:		
1.	Preterm newborn looks healthy.		
2.	Normal skin color present.		
3.	Normal body temperature maintained at 96.4 ℃ to 98.6 ℃		
4.	Preterm newborn hydrated well.		
5.	Normal muscle tone maintained.		
6.	The preterm newborn lies in a relax attitude and limbs more extended.		
7.	Screened milk		
8.	Umbilical cord looks healthy.		
	Articles sterilization:		
9.	Investigator wash hands before start the paladai feeding.		
10.	Wash feeding articles		
11.	Sterilize feeding articles before feed.		
12.	Before the feed the milk kept at room temperature (28 ℃).		
	Reflexes assessment without paladai feeding:		
13.	Rooting reflex the preterm newborn who automatically turn the face toward the stimulus		
14.	Sucking reflex of the preterm newborn's lips elicited by touching them.		
15.	Swallowing is a combination of a voluntary act.		
16.	Active response for touch stimuli.		
17.	Active response for play stimuli.		
	Tolerance:		
18.	Peristaltic movement present.		
19.	Urine output 6- 10 wet nappies in 24 hours.		
20.	Appearance and frequency of stools in 2 – 4 times in 24 hours.		

PART II

Part II Section B: Post test check list on the effects of donor breast milk bank feed among Preterm newborn in experimental group.

NOTE: The researcher will check the following checklist on recipient preterm newborn.

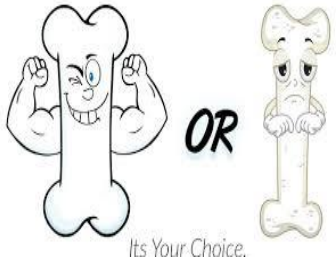
S.NO	OBERVATIONAL CHECK LIST	YES	NO
	Health status:		
1.	Preterm newborn looks healthy.		
2.	Normal skin color present.		
3.	Normal body temperature maintained at 96.4 ℃ to 98.6 ℃		
4.	Preterm newborn hydrated well.		
5.	Normal muscle tone maintained.		
6.	The preterm newborn lies in a relax attitude and limbs more extended.		
7.	Screened milk		
8.	Umbilical cord looks healthy.		
	Articles sterilization:		
9.	Investigator wash hands after the paladai feeding.		
10.	Wash feeding articles		
11.	Sterilize feeding articles after feed.		
12.	Before the feed the milk kept at room temperature (28 ℃).		
	Reflexes assessment without paladai feeding:		
13.	Rooting reflex the preterm newborn who automatically turn the face toward the stimulus		
14.	Sucking reflex of the preterm newborn's lips elicited by touching them.		
15.	Swallowing is a combination of a voluntary act.		
16.	Active response for touch stimuli.		
17.	Active response for play stimuli.		
	Tolerance:		
18.	Peristaltic movement present.		
19.	Urine output 6- 10 wet nappies in 24 hours.		
20.	Appearance and frequency of stools in 2 – 4 times in 24 hours.		

Section B: Post test check list of formula milk feed among Preterm newborn in experimental group.

S.NO	OBERVATIONAL CHECK LIST	YES	NO
	Health status:		
1.	Preterm newborn looks healthy.		
2.	Normal skin color present.		
3.	Normal body temperature maintained at 96.4 ℃ to 98.6 ℃		
4.	Preterm newborn hydrated well.		
5.	Normal muscle tone maintained.		
6.	The preterm newborn lies in a relax attitude and limbs more extended.		
7.	Screened milk		
8.	Umbilical cord looks healthy.		
	Articles sterilization:		
9.	Investigator washes hands after the paladai feeding.		
10.	Wash feeding articles		
11.	Sterilize feeding articles after feed.		
12.	Before the feed the milk kept at room temperature (28 ℃).		
	Reflexes assessment without paladai feeding:		
13.	Rooting reflex the preterm newborn who automatically turn the face toward the stimulus		
14.	Sucking reflex of the preterm newborn's lips elicited by touching them.		
15.	Swallowing is a combination of a voluntary act.		
16.	Active response for touch stimuli.		
17.	Active response for play stimuli.		
	Tolerance:		
18.	Peristaltic movement present.		
19.	Urine output 6- 10 wet nappies in 24 hours.		
20.	Appearance and frequency of stools in 2 – 4 times in 24 hours.		

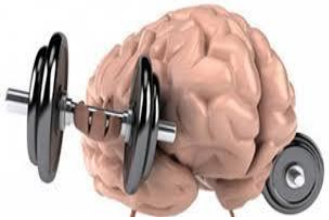
3. மார்பக புற்றுநோய் ஏற்படும் வாய்ப்பு குறையும்.

4. எலும்பு தேய்மானம் ஏற்படும் வாய்ப்பு குறையும்.



தாய்ப்பால் வங்கியில் தானம் செய்யும் தாய்மார்க்கான பயன்கள்

1. நினைவாற்றல் மற்றும் அறிவுத்திறன் அதிகரிக்கும்.



2. நோய்த் தொற்று ஏற்படும் வாய்ப்பு குறையும்.

3. சீரான உடல் வளர்ச்சி.

4. குழந்தைக்கு ஊட்டச்சத்து குறைபாடு ஏற்படாது.

இந்த சேவை அரசங்கத்தால் எந்தவித கட்டணமில்லாமல் தேவையான குழந்தைகளுக்கு இலவசமாக வழங்கப்படுகிறது.

நன்றி

பிறந்த குழந்தைகளுக்கு வரமாக அமையும் தாய்ப்பால் சேமிப்பு மையம்

முதல்வர். கி . ஜோதி சோபியா,
முதுகலை, பி.எச்.டி

முனைவர். என்.ஜெசிமெட்டில்டா,
முதுகலை, பி.எச்.டி
குழந்தை நலத்துறை தலைவர்

பொதுநலன் கருதி வெளியிடுவோர்
செல்வி.ப.லட்சுமிபிரியா, பி.எஸ்.சி.,
இரண்டாம் ஆண்டு முதுகலை
கல்வி மாணவி.

சி.எஸ்.ஐ ஜெயராஜ் அன்னபாக்கியம்
செவிலியர் கல்லூரி, பசுமலை,
மதுரை.

தமிழ்நாட்டில் உள்ள சேமிப்பு மையங்களின் விவரங்கள்

1. திருச்சி மகாத்துமா காந்தி நினைவு மருத்துவமனை
2. மதுரை இராஜாஜி அரசு மருத்துவமனை
3. தேனி அரசு மருத்துவக் கல்லூரி மருத்துவமனை
4. சேலம் மோகன் குமாரமங்கலம் அரசு மருத்துவமனை
5. தஞ்சை இராஜ மிராசுதார் அரசு மருத்துவமனை
6. எழும்பூர் அரசு மகபேறு மருத்துவமனை.

முன்னுரை

தாய்பால் சேமிப்பு மையம் என்பது தாய்பாலை சேமித்து அதை நுண்ணுயிர் நீக்கம் செய்து அதை பாதுகாக்கும் முறை ஆகும்.

தாய்ப்பால் சேமிப்பு

மையத்தின் செயல்பாடுகள்

விருப்பமுள்ள தாய்மார்களிடமிருந்து தாய்ப்பால் சேமிக்கப்பட்டு, அதனை நுண்ணுயிர் நீக்கம் செய்தபின் முறையாக பாதுகாக்கபடுகிறது. பின்பு அந்த தாய்ப்பால் தேவையான குழந்தைகளுக்கு வழங்கபடுகிறது.

தாய்ப்பால் சேமிப்பதற்கான விதிமுறைகள்

தாய்ப்பால் தானம் செய்யக்கூடாத தாய்மார்கள்

1. தடைசெய்யப்பட்டபோதை மருந்துகளை உட்க்கொள்பவர்கள். எ.கா: புகையிலை.

2. ஹார்மோன் சிகிச்சை எடுத்துக் கொள்பவர்கள்.

3. எச்.ஐ.வி, ஹெபடைடிஸ் பி மற்றும் சி, மற்றும் பால்வினை நோயால் பாதிக்கப்பட்டவர்கள்.

4. திசு மற்றும் உறுப்பு மாற்று அறுவை சிகிச்சை செய்து கொண்டவர்கள்.

5. மார்பகத்தில் பூஞ்சைத் தொற்று உள்ளவர்கள்

தாய்ப்பால் வங்கியில் தானம் செய்யும் தாய்மார்க்கான பயன்கள்

1. விரைவில் குழந்தை பிறப்பிற்கு முந்தைய உள்ள அழகைப் பெறலாம்.

2. குழந்தை பிறப்பிற்கு பிறகு அதிகபடியான இரத்தப்போக்கு ஏற்படும் வாய்ப்பு குறையும்